



11/09/15

## Technical Report for

**Stantec Consulting Services Inc.**

**Sunoco - Marcus Hook Facility, PA**

**Tank Sampling (386)**

**Accutest Job Number: JC7097**

**Sampling Date: 10/26/15**



### Report to:

**Stantec Consulting Services Inc.  
1060 Andrew Drive Suite 140  
West Chester, PA 19380  
jennifer.menges@stantec.com; stephanie.andrews@stantec.com;  
EDD@stantec.com; chris.mccardell@stantec.com  
ATTN: Jennifer Menges**

**Total number of pages in report: 370**



Test results contained within this data package meet the requirements  
of the National Environmental Laboratory Accreditation Program  
and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads "Nancy T. Cole".

**Nancy Cole  
Laboratory Director**

**Client Service contact: Marie Meidhof 732-329-0200**

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TN, TX, VA, WV, DoD ELAP (L-A-B L2248)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary .....</b>	<b>4</b>	1
<b>Section 2: Case Narrative/Conformance Summary .....</b>	<b>5</b>	2
<b>Section 3: Summary of Hits .....</b>	<b>8</b>	3
<b>Section 4: Sample Results .....</b>	<b>11</b>	4
<b>4.1: JC7097-1: MH386-1-20151026(3') .....</b>	12	5
<b>4.2: JC7097-2: MH386-2-20151026(3') .....</b>	17	6
<b>4.3: JC7097-3: MH386-3-20151026(3') .....</b>	22	7
<b>4.4: JC7097-4: MH386-4-20151026(3') .....</b>	27	8
<b>4.5: JC7097-5: MH386-5-20151026(3') .....</b>	32	9
<b>Section 5: Misc. Forms .....</b>	<b>37</b>	10
<b>5.1: Chain of Custody .....</b>	38	11
<b>5.2: Sample Tracking Chronicle .....</b>	40	12
<b>5.3: Internal Chain of Custody .....</b>	42	13
<b>Section 6: GC/MS Volatiles - QC Data Summaries .....</b>	<b>46</b>	14
<b>6.1: Method Blank Summary .....</b>	47	
<b>6.2: Blank Spike Summary .....</b>	51	
<b>6.3: Matrix Spike Summary .....</b>	54	
<b>6.4: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	55	
<b>6.5: Duplicate Summary .....</b>	57	
<b>6.6: Instrument Performance Checks (BFB) .....</b>	58	
<b>6.7: Internal Standard Area Summaries .....</b>	64	
<b>6.8: Surrogate Recovery Summaries .....</b>	68	
<b>6.9: Initial and Continuing Calibration Summaries .....</b>	69	
<b>Section 7: GC/MS Volatiles - Raw Data .....</b>	<b>97</b>	
<b>7.1: Samples .....</b>	98	
<b>7.2: Method Blanks .....</b>	142	
<b>Section 8: GC/MS Semi-volatiles - QC Data Summaries .....</b>	<b>148</b>	
<b>8.1: Method Blank Summary .....</b>	149	
<b>8.2: Blank Spike Summary .....</b>	153	
<b>8.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	155	
<b>8.4: Instrument Performance Checks (DFTPP) .....</b>	157	
<b>8.5: Internal Standard Area Summaries .....</b>	168	
<b>8.6: Surrogate Recovery Summaries .....</b>	171	
<b>8.7: Initial and Continuing Calibration Summaries .....</b>	172	
<b>Section 9: GC/MS Semi-volatiles - Raw Data .....</b>	<b>213</b>	
<b>9.1: Samples .....</b>	214	
<b>9.2: Method Blanks .....</b>	253	
<b>Section 10: Metals Analysis - QC Data Summaries .....</b>	<b>257</b>	
<b>10.1: Inst QC MA37952: Co,Pb,Ni,V,Zn .....</b>	258	
<b>10.2: Inst QC MA37966: Co,Pb,Ni,V,Zn .....</b>	280	
<b>10.3: Prep QC MP90040: Co,Pb,Ni,V,Zn .....</b>	316	
<b>Section 11: General Chemistry - QC Data Summaries .....</b>	<b>326</b>	

# Table of Contents

-2-

<b>11.1:</b> Percent Solids Raw Data Summary .....	327
<b>Section 12: Misc. Forms (Accutest Labs of New England, Inc.) .....</b>	
<b>12.1:</b> Chain of Custody .....	329
<b>12.2:</b> Sample Tracking Chronicle .....	331
<b>12.3:</b> Internal Chain of Custody .....	332
<b>Section 13: GC Volatiles - QC Data (Accutest Labs of New England, Inc.) .....</b>	
<b>13.1:</b> Method Blank Summary .....	334
<b>13.2:</b> Blank Spike Summary .....	335
<b>13.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	336
<b>13.4:</b> Surrogate Recovery Summaries .....	337
<b>13.5:</b> GC Surrogate Retention Time Summaries .....	338
<b>13.6:</b> Initial and Continuing Calibration Summaries .....	341
<b>Section 14: GC Volatiles - Raw Data (Accutest Labs of New England, Inc.) .....</b>	
<b>14.1:</b> Samples .....	347
<b>14.2:</b> Method Blanks .....	367

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14



## Sample Summary

Stantec Consulting Services Inc.

Job No: JC7097

Sunoco - Marcus Hook Facility, PA  
Project No: Tank Sampling (386)

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JC7097-1	10/26/15	13:30 CD	10/26/15	SO	Soil	MH386-1-20151026(3')
JC7097-2	10/26/15	13:45 CD	10/26/15	SO	Soil	MH386-2-20151026(3')
JC7097-3	10/26/15	14:00 CD	10/26/15	SO	Soil	MH386-3-20151026(3')
JC7097-4	10/26/15	14:15 CD	10/26/15	SO	Soil	MH386-4-20151026(3')
JC7097-5	10/26/15	14:30 CD	10/26/15	SO	Soil	MH386-5-20151026(3')

---

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** Stantec Consulting Services Inc.

**Job No** JC7097

**Site:** Sunoco - Marcus Hook Facility, PA

**Report Date** 11/9/2015 5:33:25 PM

On 10/26/2015, 5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JC7097 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatiles by GCMS By Method SW846 8260C

**Matrix:** SO

**Batch ID:** V3C5694

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC7218-1MS, JC7218-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

**Matrix:** SO

**Batch ID:** V3C5698

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC7193-2MS, JC7193-1DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- RPD(s) for Duplicate for 1,2-Dichloroethane are outside control limits for sample JC7193-1DUP. Outside control limits possibly due to sample non-homogeneity.

**Matrix:** SO

**Batch ID:** VD9618

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC7291-1MS, JC7291-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JC7097-5: Dilution required due to matrix interference.

### Extractables by GCMS By Method SW846 8270D

**Matrix:** SO

**Batch ID:** OP88470

- All samples were extracted within the recommended method holding time.
- Sample(s) JC7098-1MS, JC7098-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 4-Nitrophenol are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 4-Nitrophenol are outside control limits. Outside control limits due to matrix interference.
- JC7097-2: Elevated detection limit due to low volume of bad matrix sample extracted.
- JC7097-3: Elevated detection limit due to low volume of bad matrix sample extracted.
- JC7097-5: Elevated detection limit due to low volume of bad matrix sample extracted.
- JC7097-3: Confirmation run for internal standard areas.
- JC7097-1: Elevated detection limit due to low volume of bad matrix sample extracted.
- JC7097-1: Confirmation run for internal standard areas.

## Volatiles by GC By Method SW846 8011

**Matrix:** SO

**Batch ID:** M:GBB3508

- The data for SW846 8011 meets quality control requirements.
- JC7097-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JC7097-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JC7097-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JC7097-5: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JC7097-3: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Metals By Method SW846 6010C

**Matrix:** SO

**Batch ID:** MP90040

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC7541-2AMS, JC7541-2AMSD, JC7541-2ASDL were used as the QC samples for metals.

## Wet Chemistry By Method SM2540 G-97

**Matrix:** SO

**Batch ID:** GN35169

- The data for SM2540 G-97 meets quality control requirements.

**Matrix:** SO

**Batch ID:** GN35172

- The data for SM2540 G-97 meets quality control requirements.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest New Jersey

**Job No** JC7097

**Site:** SECORPAE: Sunoco - Marcus Hook Facility, PA

**Report Date** 11/9/2015 10:22:50 AM

5 Sample(s) were collected on 10/26/2015 and were received at Accutest on 10/26/2015 properly preserved, at 0.9 Deg. C and intact. These Samples received an Accutest job number of JC7097. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Volatiles by GC By Method SW846 8011

**Matrix:** SO

**Batch ID:** OP45205

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC7097-3MS, JC7097-3MSD were used as the QC samples indicated.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(JC7097).

## Summary of Hits

Page 1 of 3

Job Number: JC7097

Account: Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Collected: 10/26/15

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
--------------------------	------------------	-----------------	----	-----	-------	--------

JC7097-1 MH386-1-20151026(3')

Benzene	0.0806	0.00051	0.00013	mg/kg	SW846 8260C
Toluene	0.0200	0.0010	0.00021	mg/kg	SW846 8260C
Ethylbenzene	0.0511	0.0010	0.00017	mg/kg	SW846 8260C
Xylene (total)	0.131	0.0010	0.00028	mg/kg	SW846 8260C
Methyl Tert Butyl Ether	0.0092	0.0010	0.00015	mg/kg	SW846 8260C
sec-Butylbenzene	0.0010 J	0.0020	0.00017	mg/kg	SW846 8260C
tert-Butylbenzene	0.00056 J	0.0020	0.00021	mg/kg	SW846 8260C
Cyclohexane	0.116	0.0020	0.00032	mg/kg	SW846 8260C
Hexane	0.139	0.0051	0.00039	mg/kg	SW846 8260C
Isopropylbenzene	0.0077	0.0020	0.00011	mg/kg	SW846 8260C
Naphthalene	0.0025 J	0.0051	0.00019	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene	0.0143	0.0020	0.00020	mg/kg	SW846 8260C
1,3,5-Trimethylbenzene	0.0059	0.0020	0.00019	mg/kg	SW846 8260C
Benzo(a)anthracene <sup>a</sup>	0.0409 J	0.069	0.013	mg/kg	SW846 8270D
Benzo(a)pyrene <sup>a</sup>	0.0444 J	0.069	0.015	mg/kg	SW846 8270D
Benzo(g,h,i)perylene <sup>a</sup>	0.0628 J	0.069	0.021	mg/kg	SW846 8270D
Chrysene <sup>a</sup>	0.0693	0.069	0.011	mg/kg	SW846 8270D
2-Methylnaphthalene <sup>a</sup>	0.254	0.14	0.013	mg/kg	SW846 8270D
Phenanthrene <sup>a</sup>	0.0794	0.069	0.0076	mg/kg	SW846 8270D
Pyrene <sup>a</sup>	0.405	0.069	0.0086	mg/kg	SW846 8270D
Cobalt	6.7	5.7	0.046	mg/kg	SW846 6010C
Lead	27.2	2.3	0.27	mg/kg	SW846 6010C
Nickel	13.6	4.6	0.11	mg/kg	SW846 6010C
Vanadium	34.6	5.7	0.086	mg/kg	SW846 6010C
Zinc	41.1	5.7	0.88	mg/kg	SW846 6010C

JC7097-2 MH386-2-20151026(3')

Benzene	0.0015	0.00052	0.00014	mg/kg	SW846 8260C
Toluene	0.00024 J	0.0010	0.00022	mg/kg	SW846 8260C
Ethylbenzene	0.00029 J	0.0010	0.00017	mg/kg	SW846 8260C
Xylene (total)	0.0011	0.0010	0.00029	mg/kg	SW846 8260C
Methyl Tert Butyl Ether	0.0261	0.0010	0.00016	mg/kg	SW846 8260C
sec-Butylbenzene	0.0010 J	0.0021	0.00018	mg/kg	SW846 8260C
Cyclohexane	0.0022	0.0021	0.00033	mg/kg	SW846 8260C
Isopropylbenzene	0.0010 J	0.0021	0.00011	mg/kg	SW846 8260C
Naphthalene	0.00052 J	0.0052	0.00020	mg/kg	SW846 8260C
Fluorene <sup>a</sup>	0.138	0.082	0.0098	mg/kg	SW846 8270D
2-Methylnaphthalene <sup>a</sup>	0.0878 J	0.16	0.015	mg/kg	SW846 8270D
Phenanthrene <sup>a</sup>	0.147	0.082	0.0091	mg/kg	SW846 8270D
Pyrene <sup>a</sup>	0.0535 J	0.082	0.010	mg/kg	SW846 8270D
Cobalt	6.1 J	6.3	0.050	mg/kg	SW846 6010C
Lead	12.4	2.5	0.30	mg/kg	SW846 6010C

## Summary of Hits

Page 2 of 3

Job Number: JC7097  
 Account: Stantec Consulting Services Inc.  
 Project: Sunoco - Marcus Hook Facility, PA  
 Collected: 10/26/15

3

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

Nickel	15.5	5.0	0.12	mg/kg	SW846 6010C
Vanadium	48.7	6.3	0.094	mg/kg	SW846 6010C
Zinc	35.7	6.3	0.96	mg/kg	SW846 6010C

JC7097-3 MH386-3-20151026(3')

Benzene	0.0133	0.00041	0.00011	mg/kg	SW846 8260C
Toluene	0.00040 J	0.00082	0.00017	mg/kg	SW846 8260C
Ethylbenzene	0.0071	0.00082	0.00013	mg/kg	SW846 8260C
Xylene (total)	0.0111	0.00082	0.00022	mg/kg	SW846 8260C
Methyl Tert Butyl Ether	0.0010	0.00082	0.00013	mg/kg	SW846 8260C
sec-Butylbenzene	0.00043 J	0.0016	0.00014	mg/kg	SW846 8260C
Cyclohexane	0.0064	0.0016	0.00026	mg/kg	SW846 8260C
Hexane	0.0035 J	0.0041	0.00032	mg/kg	SW846 8260C
Isopropylbenzene	0.0017	0.0016	0.000087	mg/kg	SW846 8260C
Naphthalene	0.0015 J	0.0041	0.00016	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene	0.0025	0.0016	0.00016	mg/kg	SW846 8260C
1,3,5-Trimethylbenzene	0.0012 J	0.0016	0.00016	mg/kg	SW846 8260C
Benzo(a)anthracene <sup>a</sup>	0.0418 J	0.066	0.013	mg/kg	SW846 8270D
Chrysene <sup>a</sup>	0.0789	0.066	0.011	mg/kg	SW846 8270D
Fluorene <sup>a</sup>	0.112	0.066	0.0079	mg/kg	SW846 8270D
2-Methylnaphthalene <sup>a</sup>	0.206	0.13	0.012	mg/kg	SW846 8270D
Phenanthrene <sup>a</sup>	0.203	0.066	0.0074	mg/kg	SW846 8270D
Pyrene <sup>a</sup>	0.170	0.066	0.0083	mg/kg	SW846 8270D
Cobalt	8.4	5.7	0.046	mg/kg	SW846 6010C
Lead	18.9	2.3	0.27	mg/kg	SW846 6010C
Nickel	17.7	4.6	0.11	mg/kg	SW846 6010C
Vanadium	33.1	5.7	0.086	mg/kg	SW846 6010C
Zinc	41.8	5.7	0.88	mg/kg	SW846 6010C

JC7097-4 MH386-4-20151026(3')

Benzene	0.00061	0.00047	0.00013	mg/kg	SW846 8260C
Methyl Tert Butyl Ether	0.0021	0.00095	0.00014	mg/kg	SW846 8260C
Cobalt	6.7	5.9	0.047	mg/kg	SW846 6010C
Lead	9.0	2.4	0.28	mg/kg	SW846 6010C
Nickel	13.4	4.7	0.11	mg/kg	SW846 6010C
Vanadium	38.4	5.9	0.089	mg/kg	SW846 6010C
Zinc	33.4	5.9	0.91	mg/kg	SW846 6010C

JC7097-5 MH386-5-20151026(3')

Benzene <sup>b</sup>	0.0345 J	0.054	0.014	mg/kg	SW846 8260C
Cyclohexane <sup>b</sup>	0.324	0.22	0.034	mg/kg	SW846 8260C
Hexane <sup>b</sup>	0.223 J	0.54	0.042	mg/kg	SW846 8260C

**Summary of Hits**

Job Number: JC7097  
 Account: Stantec Consulting Services Inc.  
 Project: Sunoco - Marcus Hook Facility, PA  
 Collected: 10/26/15

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Naphthalene b		1.47	0.54	0.020	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene b		0.139 J	0.22	0.021	mg/kg	SW846 8260C
1,3,5-Trimethylbenzene b		0.0669 J	0.22	0.021	mg/kg	SW846 8260C
Anthracene a		0.424	0.11	0.0092	mg/kg	SW846 8270D
Benzo(a)anthracene a		0.0690 J	0.11	0.021	mg/kg	SW846 8270D
Benzo(a)pyrene a		0.0432 J	0.11	0.023	mg/kg	SW846 8270D
1,1'-Biphenyl a		0.703	0.21	0.020	mg/kg	SW846 8270D
Chrysene a		0.0874 J	0.11	0.017	mg/kg	SW846 8270D
Fluoranthene a		0.128	0.11	0.013	mg/kg	SW846 8270D
Fluorene a		0.616	0.11	0.013	mg/kg	SW846 8270D
2-Methylnaphthalene a		2.60	0.21	0.020	mg/kg	SW846 8270D
Phenanthrene a		2.11	0.11	0.012	mg/kg	SW846 8270D
Pyrene a		0.797	0.11	0.013	mg/kg	SW846 8270D
Cobalt		12.6	6.0	0.048	mg/kg	SW846 6010C
Lead		9.6	2.4	0.29	mg/kg	SW846 6010C
Nickel		14.0	4.8	0.11	mg/kg	SW846 6010C
Vanadium		42.4	6.0	0.090	mg/kg	SW846 6010C
Zinc		37.2	6.0	0.92	mg/kg	SW846 6010C

(a) Elevated detection limit due to low volume of bad matrix sample extracted.

(b) Dilution required due to matrix interference.



4

## Sample Results

---

## Report of Analysis

---

Accutest Laboratories

## Report of Analysis

Page 1 of 1

Client Sample ID: MH386-1-20151026(3')

Lab Sample ID: JC7097-1

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8260C

Percent Solids: 85.1

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C124690.D	1	11/02/15	PS	n/a	n/a	V3C5694
Run #2							

## Initial Weight

Run #1 5.8 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0806	0.00051	0.00013	mg/kg	
108-88-3	Toluene	0.0200	0.0010	0.00021	mg/kg	
100-41-4	Ethylbenzene	0.0511	0.0010	0.00017	mg/kg	
1330-20-7	Xylene (total)	0.131	0.0010	0.00028	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.0092	0.0010	0.00015	mg/kg	
135-98-8	sec-Butylbenzene	0.0010	0.0020	0.00017	mg/kg	J
98-06-6	tert-Butylbenzene	0.00056	0.0020	0.00021	mg/kg	J
110-82-7	Cyclohexane	0.116	0.0020	0.00032	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
110-54-3	Hexane	0.139	0.0051	0.00039	mg/kg	
98-82-8	Isopropylbenzene	0.0077	0.0020	0.00011	mg/kg	
91-20-3	Naphthalene	0.0025	0.0051	0.00019	mg/kg	J
95-63-6	1,2,4-Trimethylbenzene	0.0143	0.0020	0.00020	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0059	0.0020	0.00019	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		70-122%
17060-07-0	1,2-Dichloroethane-D4	101%		68-124%
2037-26-5	Toluene-D8	105%		77-125%
460-00-4	4-Bromofluorobenzene	98%		72-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 2

Client Sample ID: MH386-1-20151026(3')

Lab Sample ID: JC7097-1

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8270D SW846 3546

Percent Solids: 85.1

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	3E77611.D	1	11/04/15	SW	10/28/15	OP88470	E3E3377
Run #2 <sup>b</sup>	2M78949.D	2	11/05/15	AN	10/28/15	OP88470	E2M3443

	Initial Weight	Final Volume
Run #1	17.1 g	1.0 ml
Run #2	17.1 g	1.0 ml

## ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.34	0.13	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.34	0.30	mg/kg	
95-48-7	2-Methylphenol	ND	0.14	0.10	mg/kg	
	3&4-Methylphenol	ND	0.14	0.066	mg/kg	
100-02-7	4-Nitrophenol	ND	0.69	0.12	mg/kg	
108-95-2	Phenol	ND	0.14	0.051	mg/kg	
83-32-9	Acenaphthene	ND	0.069	0.065	mg/kg	
120-12-7	Anthracene	ND	0.069	0.0059	mg/kg	
56-55-3	Benzo(a)anthracene	0.0409	0.069	0.013	mg/kg	J
50-32-8	Benzo(a)pyrene	0.0444	0.069	0.015	mg/kg	J
205-99-2	Benzo(b)fluoranthene	ND	0.069	0.014	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0628	0.069	0.021	mg/kg	J
207-08-9	Benzo(k)fluoranthene	ND	0.069	0.015	mg/kg	
92-52-4	1,1'-Biphenyl	ND	0.14	0.013	mg/kg	
218-01-9	Chrysene	0.0693	0.069	0.011	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.069	0.025	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.14	0.0081	mg/kg	
84-66-2	Diethyl phthalate	ND	0.14	0.0087	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.14	0.024	mg/kg	
206-44-0	Fluoranthene	ND	0.069	0.0084	mg/kg	
86-73-7	Fluorene	ND	0.069	0.0082	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.069	0.036	mg/kg	
91-57-6	2-Methylnaphthalene	0.254	0.14	0.013	mg/kg	
85-01-8	Phenanthrene	0.0794	0.069	0.0076	mg/kg	
129-00-0	Pyrene	0.405	0.069	0.0086	mg/kg	
110-86-1	Pyridine	ND	0.14	0.034	mg/kg	
91-22-5	Quinoline	ND	0.34	0.025	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	69%	65%	30-106%
4165-62-2	Phenol-d5	70%	65%	30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

4.1

4

**Report of Analysis**

Page 2 of 2

<b>Client Sample ID:</b>	<b>MH386-1-20151026(3')</b>	<b>Date Sampled:</b>	<b>10/26/15</b>
<b>Lab Sample ID:</b>	<b>JC7097-1</b>	<b>Date Received:</b>	<b>10/26/15</b>
<b>Matrix:</b>	<b>SO - Soil</b>	<b>Percent Solids:</b>	<b>85.1</b>
<b>Method:</b>	<b>SW846 8270D SW846 3546</b>		
<b>Project:</b>	<b>Sunoco - Marcus Hook Facility, PA</b>		

**ABN Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	95%	83%	24-140%
4165-60-0	Nitrobenzene-d5	84%	64%	26-122%
321-60-8	2-Fluorobiphenyl	82%	73%	36-112%
1718-51-0	Terphenyl-d14	85%	75%	36-132%

- (a) Elevated detection limit due to low volume of bad matrix sample extracted.  
 (b) Confirmation run for internal standard areas.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

Client Sample ID: MH386-1-20151026(3')

Lab Sample ID: JC7097-1

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8011 SW846 3550B

Percent Solids: 85.1

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BB65078.D	1	10/30/15	AMA	10/29/15	M:OP45205	M:GBB3508
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.00049	mg/kg	
<hr/>						
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	114%		70-170%		
460-00-4	Bromofluorobenzene (S)	120%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

Client Sample ID:	MH386-1-20151026(3')	Date Sampled:	10/26/15
Lab Sample ID:	JC7097-1	Date Received:	10/26/15
Matrix:	SO - Soil	Percent Solids:	85.1
Project:	Sunoco - Marcus Hook Facility, PA		

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	6.7	5.7	0.046	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Lead	27.2	2.3	0.27	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Nickel	13.6	4.6	0.11	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Vanadium	34.6	5.7	0.086	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Zinc	41.1	5.7	0.88	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>

(1) Instrument QC Batch: MA37966

(2) Prep QC Batch: MP90040

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.2  
4

Client Sample ID: MH386-2-20151026(3')

Lab Sample ID: JC7097-2

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8260C

Percent Solids: 80.8

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C124755.D	1	11/03/15	PS	n/a	n/a	V3C5698
Run #2							

## Initial Weight

Run #1 5.9 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0015	0.00052	0.00014	mg/kg	
108-88-3	Toluene	0.00024	0.0010	0.00022	mg/kg	J
100-41-4	Ethylbenzene	0.00029	0.0010	0.00017	mg/kg	J
1330-20-7	Xylene (total)	0.0011	0.0010	0.00029	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.0261	0.0010	0.00016	mg/kg	
135-98-8	sec-Butylbenzene	0.0010	0.0021	0.00018	mg/kg	J
98-06-6	tert-Butylbenzene	ND	0.0021	0.00022	mg/kg	
110-82-7	Cyclohexane	0.0022	0.0021	0.00033	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
110-54-3	Hexane	ND	0.0052	0.00041	mg/kg	
98-82-8	Isopropylbenzene	0.0010	0.0021	0.00011	mg/kg	J
91-20-3	Naphthalene	0.00052	0.0052	0.00020	mg/kg	J
95-63-6	1,2,4-Trimethylbenzene	ND	0.0021	0.00021	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0021	0.00020	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		70-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%
2037-26-5	Toluene-D8	103%		77-125%
460-00-4	4-Bromofluorobenzene	97%		72-130%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 2

4.2  
4

Client Sample ID:	MH386-2-20151026(3')	Date Sampled:	10/26/15
Lab Sample ID:	JC7097-2	Date Received:	10/26/15
Matrix:	SO - Soil	Percent Solids:	80.8
Method:	SW846 8270D SW846 3546		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E77603.D	1	11/04/15	SW	10/28/15	OP88470	E3E3377

Initial Weight	Final Volume
Run #1 15.1 g	1.0 ml
Run #2	

## ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.41	0.15	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.41	0.36	mg/kg	
95-48-7	2-Methylphenol	ND	0.16	0.12	mg/kg	
	3&4-Methylphenol	ND	0.16	0.078	mg/kg	
100-02-7	4-Nitrophenol	ND	0.82	0.14	mg/kg	
108-95-2	Phenol	ND	0.16	0.061	mg/kg	
83-32-9	Acenaphthene	ND	0.082	0.077	mg/kg	
120-12-7	Anthracene	ND	0.082	0.0071	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.082	0.016	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.082	0.017	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.082	0.017	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.082	0.025	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.082	0.018	mg/kg	
92-52-4	1,1'-Biphenyl	ND	0.16	0.015	mg/kg	
218-01-9	Chrysene	ND	0.082	0.013	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.082	0.029	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.16	0.0097	mg/kg	
84-66-2	Diethyl phthalate	ND	0.16	0.010	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.16	0.029	mg/kg	
206-44-0	Fluoranthene	ND	0.082	0.010	mg/kg	
86-73-7	Fluorene	0.138	0.082	0.0098	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.082	0.042	mg/kg	
91-57-6	2-Methylnaphthalene	0.0878	0.16	0.015	mg/kg	J
85-01-8	Phenanthrene	0.147	0.082	0.0091	mg/kg	
129-00-0	Pyrene	0.0535	0.082	0.010	mg/kg	J
110-86-1	Pyridine	ND	0.16	0.041	mg/kg	
91-22-5	Quinoline	ND	0.41	0.030	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		30-106%
4165-62-2	Phenol-d5	73%		30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 2 of 2

<b>Client Sample ID:</b>	MH386-2-20151026(3')	<b>Date Sampled:</b>	10/26/15
<b>Lab Sample ID:</b>	JC7097-2	<b>Date Received:</b>	10/26/15
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	80.8
<b>Method:</b>	SW846 8270D SW846 3546		
<b>Project:</b>	Sunoco - Marcus Hook Facility, PA		

**ABN Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	87%		24-140%
4165-60-0	Nitrobenzene-d5	79%		26-122%
321-60-8	2-Fluorobiphenyl	77%		36-112%
1718-51-0	Terphenyl-d14	81%		36-132%

(a) Elevated detection limit due to low volume of bad matrix sample extracted.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.2  
4

Client Sample ID: MH386-2-20151026(3')

Lab Sample ID: JC7097-2

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8011 SW846 3550B

Percent Solids: 80.8

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BB65080.D	1	10/30/15	AMA	10/29/15	M:OP45205	M:GBB3508
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0030	0.00051	mg/kg	
<hr/>						
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	123%		70-170%		
460-00-4	Bromofluorobenzene (S)	127%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

Client Sample ID: MH386-2-20151026(3')

Lab Sample ID: JC7097-2

Matrix: SO - Soil

Date Sampled: 10/26/15

Date Received: 10/26/15

Percent Solids: 80.8

Project: Sunoco - Marcus Hook Facility, PA

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	6.1 J	6.3	0.050	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Lead	12.4	2.5	0.30	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Nickel	15.5	5.0	0.12	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Vanadium	48.7	6.3	0.094	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Zinc	35.7	6.3	0.96	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>

(1) Instrument QC Batch: MA37966

(2) Prep QC Batch: MP90040

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.3  
4

Client Sample ID: MH386-3-20151026(3')

Lab Sample ID: JC7097-3

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8260C

Percent Solids: 88.3

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C124692.D	1	11/02/15	PS	n/a	n/a	V3C5694
Run #2							

## Initial Weight

Run #1 6.9 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0133	0.00041	0.00011	mg/kg	
108-88-3	Toluene	0.00040	0.00082	0.00017	mg/kg	J
100-41-4	Ethylbenzene	0.0071	0.00082	0.00013	mg/kg	
1330-20-7	Xylene (total)	0.0111	0.00082	0.00022	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.0010	0.00082	0.00013	mg/kg	
135-98-8	sec-Butylbenzene	0.00043	0.0016	0.00014	mg/kg	J
98-06-6	tert-Butylbenzene	ND	0.0016	0.00017	mg/kg	
110-82-7	Cyclohexane	0.0064	0.0016	0.00026	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00082	0.00011	mg/kg	
110-54-3	Hexane	0.0035	0.0041	0.00032	mg/kg	J
98-82-8	Isopropylbenzene	0.0017	0.0016	0.000087	mg/kg	
91-20-3	Naphthalene	0.0015	0.0041	0.00016	mg/kg	J
95-63-6	1,2,4-Trimethylbenzene	0.0025	0.0016	0.00016	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0012	0.0016	0.00016	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-122%
17060-07-0	1,2-Dichloroethane-D4	100%		68-124%
2037-26-5	Toluene-D8	102%		77-125%
460-00-4	4-Bromofluorobenzene	94%		72-130%

ND = Not detected

MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 2

4.3  
4

Client Sample ID: MH386-3-20151026(3')

Lab Sample ID: JC7097-3

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8270D SW846 3546

Percent Solids: 88.3

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	3E77610.D	1	11/04/15	SW	10/28/15	OP88470	E3E3377
Run #2 <sup>b</sup>	2M78950.D	2	11/05/15	AN	10/28/15	OP88470	E2M3443

	Initial Weight	Final Volume
Run #1	17.1 g	1.0 ml
Run #2	17.1 g	1.0 ml

## ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.33	0.12	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.33	0.29	mg/kg	
95-48-7	2-Methylphenol	ND	0.13	0.096	mg/kg	
	3&4-Methylphenol	ND	0.13	0.063	mg/kg	
100-02-7	4-Nitrophenol	ND	0.66	0.11	mg/kg	
108-95-2	Phenol	ND	0.13	0.050	mg/kg	
83-32-9	Acenaphthene	ND	0.066	0.062	mg/kg	
120-12-7	Anthracene	ND	0.066	0.0057	mg/kg	
56-55-3	Benzo(a)anthracene	0.0418	0.066	0.013	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.066	0.014	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.066	0.014	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.066	0.020	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.066	0.015	mg/kg	
92-52-4	1,1'-Biphenyl	ND	0.13	0.012	mg/kg	
218-01-9	Chrysene	0.0789	0.066	0.011	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.066	0.024	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.13	0.0078	mg/kg	
84-66-2	Diethyl phthalate	ND	0.13	0.0084	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.13	0.023	mg/kg	
206-44-0	Fluoranthene	ND	0.066	0.0081	mg/kg	
86-73-7	Fluorene	0.112	0.066	0.0079	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.066	0.034	mg/kg	
91-57-6	2-Methylnaphthalene	0.206	0.13	0.012	mg/kg	
85-01-8	Phenanthrene	0.203	0.066	0.0074	mg/kg	
129-00-0	Pyrene	0.170	0.066	0.0083	mg/kg	
110-86-1	Pyridine	ND	0.13	0.033	mg/kg	
91-22-5	Quinoline	ND	0.33	0.024	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%	72%	30-106%
4165-62-2	Phenol-d5	77%	70%	30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 2 of 2

<b>Client Sample ID:</b>	<b>MH386-3-20151026(3')</b>	<b>Date Sampled:</b>	<b>10/26/15</b>
<b>Lab Sample ID:</b>	<b>JC7097-3</b>	<b>Date Received:</b>	<b>10/26/15</b>
<b>Matrix:</b>	<b>SO - Soil</b>	<b>Percent Solids:</b>	<b>88.3</b>
<b>Method:</b>	<b>SW846 8270D SW846 3546</b>		
<b>Project:</b>	<b>Sunoco - Marcus Hook Facility, PA</b>		

**ABN Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	99%	83%	24-140%
4165-60-0	Nitrobenzene-d5	95%	69%	26-122%
321-60-8	2-Fluorobiphenyl	86%	75%	36-112%
1718-51-0	Terphenyl-d14	90%	77%	36-132%

- (a) Elevated detection limit due to low volume of bad matrix sample extracted.  
 (b) Confirmation run for internal standard areas.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.3  
4

Client Sample ID: MH386-3-20151026(3')

Lab Sample ID: JC7097-3

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8011 SW846 3550B

Percent Solids: 88.3

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BB65081.D	1	10/30/15	AMA	10/29/15	M:OP45205	M:GBB3508
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0028	0.00047	mg/kg	
<hr/>						
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	123%		70-170%		
460-00-4	Bromofluorobenzene (S)	114%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

Client Sample ID:	MH386-3-20151026(3')	Date Sampled:	10/26/15
Lab Sample ID:	JC7097-3	Date Received:	10/26/15
Matrix:	SO - Soil	Percent Solids:	88.3
Project:	Sunoco - Marcus Hook Facility, PA		

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	8.4	5.7	0.046	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Lead	18.9	2.3	0.27	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Nickel	17.7	4.6	0.11	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Vanadium	33.1	5.7	0.086	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Zinc	41.8	5.7	0.88	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>

(1) Instrument QC Batch: MA37966

(2) Prep QC Batch: MP90040

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

Page 1 of 1

Client Sample ID: MH386-4-20151026(3')

Lab Sample ID: JC7097-4

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8260C

Percent Solids: 82.6

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C124768.D	1	11/03/15	PS	n/a	n/a	V3C5698
Run #2							

## Initial Weight

Run #1 6.4 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.00061	0.00047	0.00013	mg/kg	
108-88-3	Toluene	ND	0.00095	0.00020	mg/kg	
100-41-4	Ethylbenzene	ND	0.00095	0.00015	mg/kg	
1330-20-7	Xylene (total)	ND	0.00095	0.00026	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	0.0021	0.00095	0.00014	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.0019	0.00016	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.0019	0.00020	mg/kg	
110-82-7	Cyclohexane	ND	0.0019	0.00030	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00095	0.00013	mg/kg	
110-54-3	Hexane	ND	0.0047	0.00037	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0019	0.00010	mg/kg	
91-20-3	Naphthalene	ND	0.0047	0.00018	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0019	0.00019	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0019	0.00018	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		70-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	100%		77-125%
460-00-4	4-Bromofluorobenzene	99%		72-130%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 2

Client Sample ID: MH386-4-20151026(3')

Lab Sample ID: JC7097-4

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8270D SW846 3546

Percent Solids: 82.6

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E77604.D	1	11/04/15	SW	10/28/15	OP88470	E3E3377
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.20	0.073	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.20	0.18	mg/kg	
95-48-7	2-Methylphenol	ND	0.080	0.058	mg/kg	
	3&4-Methylphenol	ND	0.080	0.038	mg/kg	
100-02-7	4-Nitrophenol	ND	0.40	0.068	mg/kg	
108-95-2	Phenol	ND	0.080	0.030	mg/kg	
83-32-9	Acenaphthene	ND	0.040	0.038	mg/kg	
120-12-7	Anthracene	ND	0.040	0.0035	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.040	0.0077	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.040	0.0085	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.0083	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.040	0.012	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.040	0.0089	mg/kg	
92-52-4	1,1'-Biphenyl	ND	0.080	0.0074	mg/kg	
218-01-9	Chrysene	ND	0.040	0.0065	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.040	0.014	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.080	0.0047	mg/kg	
84-66-2	Diethyl phthalate	ND	0.080	0.0051	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.080	0.014	mg/kg	
206-44-0	Fluoranthene	ND	0.040	0.0049	mg/kg	
86-73-7	Fluorene	ND	0.040	0.0048	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.040	0.021	mg/kg	
91-57-6	2-Methylnaphthalene	ND	0.080	0.0075	mg/kg	
85-01-8	Phenanthrene	ND	0.040	0.0044	mg/kg	
129-00-0	Pyrene	ND	0.040	0.0050	mg/kg	
110-86-1	Pyridine	ND	0.080	0.020	mg/kg	
91-22-5	Quinoline	ND	0.20	0.015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		30-106%
4165-62-2	Phenol-d5	72%		30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 2 of 2

<b>Client Sample ID:</b>	<b>MH386-4-20151026(3')</b>	<b>Date Sampled:</b>	<b>10/26/15</b>
<b>Lab Sample ID:</b>	<b>JC7097-4</b>	<b>Date Received:</b>	<b>10/26/15</b>
<b>Matrix:</b>	<b>SO - Soil</b>	<b>Percent Solids:</b>	<b>82.6</b>
<b>Method:</b>	<b>SW846 8270D SW846 3546</b>		
<b>Project:</b>	<b>Sunoco - Marcus Hook Facility, PA</b>		

**ABN Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	85%		24-140%
4165-60-0	Nitrobenzene-d5	90%		26-122%
321-60-8	2-Fluorobiphenyl	77%		36-112%
1718-51-0	Terphenyl-d14	80%		36-132%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

Client Sample ID: MH386-4-20151026(3')

Lab Sample ID: JC7097-4

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8011 SW846 3550B

Percent Solids: 82.6

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BB65082.D	1	10/30/15	AMA	10/29/15	M:OP45205	M:GBB3508
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0030	0.00050	mg/kg	
<hr/>						
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	130%		70-170%		
460-00-4	Bromofluorobenzene (S)	115%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

Client Sample ID:	MH386-4-20151026(3')	Date Sampled:	10/26/15
Lab Sample ID:	JC7097-4	Date Received:	10/26/15
Matrix:	SO - Soil	Percent Solids:	82.6
Project:	Sunoco - Marcus Hook Facility, PA		

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	6.7	5.9	0.047	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Lead	9.0	2.4	0.28	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Nickel	13.4	4.7	0.11	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Vanadium	38.4	5.9	0.089	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Zinc	33.4	5.9	0.91	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>

(1) Instrument QC Batch: MA37966

(2) Prep QC Batch: MP90040

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.5  
4

Client Sample ID:	MH386-5-20151026(3')	Date Sampled:	10/26/15
Lab Sample ID:	JC7097-5	Date Received:	10/26/15
Matrix:	SO - Soil	Percent Solids:	84.4
Method:	SW846 8260C		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D235585.D	1	11/06/15	BM	n/a	n/a	VD9618

Run #1	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.0 g	10.0 ml	100 ul
Run #2			

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0345	0.054	0.014	mg/kg	
108-88-3	Toluene	ND	0.11	0.022	mg/kg	
100-41-4	Ethylbenzene	ND	0.11	0.018	mg/kg	
1330-20-7	Xylene (total)	ND	0.11	0.030	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.11	0.017	mg/kg	
135-98-8	sec-Butylbenzene	ND	0.22	0.018	mg/kg	
98-06-6	tert-Butylbenzene	ND	0.22	0.023	mg/kg	
110-82-7	Cyclohexane	0.324	0.22	0.034	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.11	0.014	mg/kg	
110-54-3	Hexane	0.223	0.54	0.042	mg/kg	J
98-82-8	Isopropylbenzene	ND	0.22	0.011	mg/kg	
91-20-3	Naphthalene	1.47	0.54	0.020	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.139	0.22	0.021	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	0.0669	0.22	0.021	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		70-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%
2037-26-5	Toluene-D8	99%		77-125%
460-00-4	4-Bromofluorobenzene	101%		72-130%

(a) Dilution required due to matrix interference.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 2

4.5  
4

Client Sample ID:	MH386-5-20151026(3')	Date Sampled:	10/26/15
Lab Sample ID:	JC7097-5	Date Received:	10/26/15
Matrix:	SO - Soil	Percent Solids:	84.4
Method:	SW846 8270D SW846 3546		
Project:	Sunoco - Marcus Hook Facility, PA		

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E77605.D	1	11/04/15	SW	10/28/15	OP88470	E3E3377

Run #1	Initial Weight	Final Volume
Run #1	11.1 g	1.0 ml
Run #2		

## ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.53	0.20	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.53	0.47	mg/kg	
95-48-7	2-Methylphenol	ND	0.21	0.15	mg/kg	
	3&4-Methylphenol	ND	0.21	0.10	mg/kg	
100-02-7	4-Nitrophenol	ND	1.1	0.18	mg/kg	
108-95-2	Phenol	ND	0.21	0.080	mg/kg	
83-32-9	Acenaphthene	ND	0.11	0.10	mg/kg	
120-12-7	Anthracene	0.424	0.11	0.0092	mg/kg	
56-55-3	Benzo(a)anthracene	0.0690	0.11	0.021	mg/kg	J
50-32-8	Benzo(a)pyrene	0.0432	0.11	0.023	mg/kg	J
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.022	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.032	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.11	0.024	mg/kg	
92-52-4	1,1'-Biphenyl	0.703	0.21	0.020	mg/kg	
218-01-9	Chrysene	0.0874	0.11	0.017	mg/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	0.038	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.21	0.013	mg/kg	
84-66-2	Diethyl phthalate	ND	0.21	0.014	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.21	0.037	mg/kg	
206-44-0	Fluoranthene	0.128	0.11	0.013	mg/kg	
86-73-7	Fluorene	0.616	0.11	0.013	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	0.055	mg/kg	
91-57-6	2-Methylnaphthalene	2.60	0.21	0.020	mg/kg	
85-01-8	Phenanthrene	2.11	0.11	0.012	mg/kg	
129-00-0	Pyrene	0.797	0.11	0.013	mg/kg	
110-86-1	Pyridine	ND	0.21	0.053	mg/kg	
91-22-5	Quinoline	ND	0.53	0.039	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	71%		30-106%
4165-62-2	Phenol-d5	70%		30-106%

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 2 of 2

<b>Client Sample ID:</b>	<b>MH386-5-20151026(3')</b>	<b>Date Sampled:</b>	<b>10/26/15</b>
<b>Lab Sample ID:</b>	<b>JC7097-5</b>	<b>Date Received:</b>	<b>10/26/15</b>
<b>Matrix:</b>	<b>SO - Soil</b>	<b>Percent Solids:</b>	<b>84.4</b>
<b>Method:</b>	<b>SW846 8270D SW846 3546</b>		
<b>Project:</b>	<b>Sunoco - Marcus Hook Facility, PA</b>		

**ABN Special List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	89%		24-140%
4165-60-0	Nitrobenzene-d5	88%		26-122%
321-60-8	2-Fluorobiphenyl	74%		36-112%
1718-51-0	Terphenyl-d14	80%		36-132%

(a) Elevated detection limit due to low volume of bad matrix sample extracted.

ND = Not detected MDL = Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

Client Sample ID: MH386-5-20151026(3')

Lab Sample ID: JC7097-5

Date Sampled: 10/26/15

Matrix: SO - Soil

Date Received: 10/26/15

Method: SW846 8011 SW846 3550B

Percent Solids: 84.4

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	BB65083.D	1	10/30/15	AMA	10/29/15	M:OP45205	M:GBB3508
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.00049	mg/kg	
<hr/>						
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	129%		70-170%		
460-00-4	Bromofluorobenzene (S)	123%		70-170%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

Client Sample ID:	MH386-5-20151026(3')	Date Sampled:	10/26/15
Lab Sample ID:	JC7097-5	Date Received:	10/26/15
Matrix:	SO - Soil	Percent Solids:	84.4
Project:	Sunoco - Marcus Hook Facility, PA		

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cobalt	12.6	6.0	0.048	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Lead	9.6	2.4	0.29	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Nickel	14.0	4.8	0.11	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Vanadium	42.4	6.0	0.090	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>
Zinc	37.2	6.0	0.92	mg/kg	1	11/03/15	11/06/15	ND	SW846 6010C <sup>1</sup>

(1) Instrument QC Batch: MA37966

(2) Prep QC Batch: MP90040

RL = Reporting Limit  
 MDL = Method Detection Limit

U = Indicates a result < MDL  
 J = Indicates a result > = MDL but < RL



## Misc. Forms

---

5

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



500

## **CHAIN OF CUSTODY**

PAGE 1 OF 3

2235 Route 130, Dayton, NJ 08810  
TEL. 732-329-0200 FAX: 732-329-3499/3480  
[www.acutest.com](http://www.acutest.com)

JC7097: Chain of Custody  
Page 1 of 2



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JC7097 Client: \_\_\_\_\_ Project: \_\_\_\_\_  
Date / Time Received: 10/26/2015 6:21:00 PM Delivery Method: \_\_\_\_\_ Airbill #'s: \_\_\_\_\_

Cooler Temps (Raw Measured) °C: Cooler 1: (4.8); Cooler 2: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (5.0); Cooler 2: (3.8);

<b>Cooler Security</b>	<u>Y or N</u>	<u>Y or N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>	3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/> <input type="checkbox"/>	4. Smpl Dates/Time OK <input checked="" type="checkbox"/> <input type="checkbox"/>

<b>Cooler Temperature</b>	<u>Y or N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Cooler temp verification:	IR Gun
3. Cooler media:	Ice (Bag)
4. No. Coolers:	3

<b>Quality Control Preservation</b>	<u>Y or N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	

Comments

Accutest Laboratories  
V:732.329.0200

2235 US Highway 130  
P: 732.329.3499

Dayton, New Jersey  
www.accutest.com

5.1

5

<b>Sample Integrity - Documentation</b>	<u>Y or N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/> <input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/> <input type="checkbox"/>

<b>Sample Integrity - Condition</b>	<u>Y or N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/> <input type="checkbox"/>
3. Condition of sample:	Intact

<b>Sample Integrity - Instructions</b>	<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/> <input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
5. Filtering instructions clear:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	

**JC7097: Chain of Custody**

**Page 2 of 2**

## Internal Sample Tracking Chronicle

**Stantec Consulting Services Inc.**

Job No: JC7097

**Sunoco - Marcus Hook Facility, PA**  
**Project No: Tank Sampling (386)**

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC7097-1	Collected: 26-OCT-15 13:30 By: CD			Received: 26-OCT-15	By: AS	
MH386-1-20151026(3')						
JC7097-1	SM2540 G-97	28-OCT-15 17:00	KP			%SOL
JC7097-1	SW846 8011	30-OCT-15 13:26	AMA	29-OCT-15	AMA	V8011EDB
JC7097-1	SW846 8260C	02-NOV-15 09:50	PS			V8260SL2
JC7097-1	SW846 8270D	04-NOV-15 06:53	SW	28-OCT-15	NR	AB8270SL3
JC7097-1	SW846 8270D	05-NOV-15 20:15	AN	28-OCT-15	NR	AB8270SL3
JC7097-1	SW846 6010C	06-NOV-15 03:22	ND	03-NOV-15	JA	CO,NI,PB,V,ZN
JC7097-2	Collected: 26-OCT-15 13:45 By: CD			Received: 26-OCT-15	By: AS	
MH386-2-20151026(3')						
JC7097-2	SM2540 G-97	28-OCT-15 17:00	KP			%SOL
JC7097-2	SW846 8011	30-OCT-15 14:25	AMA	29-OCT-15	AMA	V8011EDB
JC7097-2	SW846 8260C	03-NOV-15 17:11	PS			V8260SL2
JC7097-2	SW846 8270D	04-NOV-15 03:27	SW	28-OCT-15	NR	AB8270SL3
JC7097-2	SW846 6010C	06-NOV-15 03:27	ND	03-NOV-15	JA	CO,NI,PB,V,ZN
JC7097-3	Collected: 26-OCT-15 14:00 By: CD			Received: 26-OCT-15	By: AS	
MH386-3-20151026(3')						
JC7097-3	SM2540 G-97	28-OCT-15 17:00	KP			%SOL
JC7097-3	SW846 8011	30-OCT-15 14:54	AMA	29-OCT-15	AMA	V8011EDB
JC7097-3	SW846 8260C	02-NOV-15 10:45	PS			V8260SL2
JC7097-3	SW846 8270D	04-NOV-15 06:27	SW	28-OCT-15	NR	AB8270SL3
JC7097-3	SW846 8270D	05-NOV-15 20:42	AN	28-OCT-15	NR	AB8270SL3
JC7097-3	SW846 6010C	06-NOV-15 03:33	ND	03-NOV-15	JA	CO,NI,PB,V,ZN
JC7097-4	Collected: 26-OCT-15 14:15 By: CD			Received: 26-OCT-15	By: AS	
MH386-4-20151026(3')						
JC7097-4	SM2540 G-97	28-OCT-15 17:00	KP			%SOL
JC7097-4	SW846 8011	30-OCT-15 15:23	AMA	29-OCT-15	AMA	V8011EDB
JC7097-4	SW846 8260C	03-NOV-15 23:11	PS			V8260SL2
JC7097-4	SW846 8270D	04-NOV-15 03:52	SW	28-OCT-15	NR	AB8270SL3
JC7097-4	SW846 6010C	06-NOV-15 03:39	ND	03-NOV-15	JA	CO,NI,PB,V,ZN

## Internal Sample Tracking Chronicle

Stantec Consulting Services Inc.

Job No: JC7097

Sunoco - Marcus Hook Facility, PA  
Project No: Tank Sampling (386)

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
---------------	--------	----------	----	---------	----	------------

JC7097-5 Collected: 26-OCT-15 14:30 By: CD Received: 26-OCT-15 By: AS  
MH386-5-20151026(3')

JC7097-5	SM2540 G-97	28-OCT-15 17:00	KP		%SOL	
JC7097-5	SW846 8011	30-OCT-15 15:53	AMA	29-OCT-15	AMA	V8011EDB
JC7097-5	SW846 8270D	04-NOV-15 04:18	SW	28-OCT-15	NR	AB8270SL3
JC7097-5	SW846 6010C	06-NOV-15 07:01	ND	03-NOV-15	JA	CO,NI,PB,V,ZN
JC7097-5	SW846 8260C	06-NOV-15 22:32	BM			V8260SL2

# Accutest Internal Chain of Custody

Page 1 of 4

Job Number: JC7097  
 Account: SECORPAE Stantec Consulting Services Inc.  
 Project: Sunoco - Marcus Hook Facility, PA  
 Received: 10/26/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7097-1.1	Secured Storage	Albert Quayson	10/28/15 07:58	Retrieve from Storage
JC7097-1.1	Albert Quayson	Secured Storage	10/28/15 09:43	Return to Storage
JC7097-1.1.1	Albert Quayson	Organics Prep	10/28/15 08:04	Extract from JC7097-1.1
JC7097-1.1.1	Organics Prep	Nida Rizvi	10/28/15 14:57	Extract from JC7097-1.1
JC7097-1.1.1	Nida Rizvi	Extract Storage	10/28/15 14:57	Return to Storage
JC7097-1.1.1	Extract Storage	Sara Davis	11/04/15 01:06	Retrieve from Storage
JC7097-1.1.1	Sara Davis	GCMS3E	11/04/15 01:06	Load on Instrument
JC7097-1.1.1	GCMS3E	Ashley Noble	11/05/15 15:05	Unload from Instrument
JC7097-1.1.1	Ashley Noble	Extract Freezer	11/05/15 15:05	Return to Storage
JC7097-1.2	Secured Storage	Todd Shoemaker	10/28/15 11:55	Retrieve from Storage
JC7097-1.2	Todd Shoemaker	Secured Staging Area	10/28/15 11:56	Return to Storage
JC7097-1.2	Secured Staging Area	Kruti Patel	10/28/15 14:38	Retrieve from Storage
JC7097-1.2	Kruti Patel	Secured Storage	10/28/15 15:15	Return to Storage
JC7097-1.2	Secured Storage	Jessica Adametz	11/03/15 07:33	Retrieve from Storage
JC7097-1.2	Jessica Adametz	Secured Storage	11/03/15 09:21	Return to Storage
JC7097-1.2.1	Jessica Adametz	Metals Digestion	11/03/15 08:52	Digestate from JC7097-1.2
JC7097-1.2.1	Metals Digestion	Jessica Adametz	11/03/15 08:53	Digestate from JC7097-1.2
JC7097-1.2.1	Jessica Adametz	Metals Digestate Storage	11/03/15 08:53	Return to Storage
JC7097-1.3	Secured Storage	Robert Lofrano	10/27/15 15:39	Retrieve from Storage
JC7097-1.3	Robert Lofrano		10/27/15 15:40	Subcontract
JC7097-1.5	Secured Storage	Prashant Shukla	11/01/15 17:21	Retrieve from Storage
JC7097-1.5	Prashant Shukla	GCMS3C	11/01/15 17:21	Load on Instrument
JC7097-1.5	GCMS3C	Prashant Shukla	11/02/15 11:22	Unload from Instrument
JC7097-1.5	Prashant Shukla		11/02/15 11:23	Depleted
JC7097-2.1	Secured Storage	Albert Quayson	10/28/15 07:58	Retrieve from Storage
JC7097-2.1	Albert Quayson	Secured Storage	10/28/15 09:43	Return to Storage
JC7097-2.1.1	Albert Quayson	Organics Prep	10/28/15 08:04	Extract from JC7097-2.1
JC7097-2.1.1	Organics Prep	Nida Rizvi	10/28/15 14:57	Extract from JC7097-2.1
JC7097-2.1.1	Nida Rizvi	Extract Storage	10/28/15 14:57	Return to Storage
JC7097-2.1.1	Extract Storage	Sara Davis	11/04/15 01:06	Retrieve from Storage
JC7097-2.1.1	Sara Davis	GCMS3E	11/04/15 01:06	Load on Instrument
JC7097-2.1.1	GCMS3E	Ashley Noble	11/04/15 11:29	Unload from Instrument
JC7097-2.1.1	Ashley Noble	Extract Freezer	11/04/15 11:29	Return to Storage
JC7097-2.2	Secured Storage	Todd Shoemaker	10/28/15 11:55	Retrieve from Storage
JC7097-2.2	Todd Shoemaker	Secured Staging Area	10/28/15 11:56	Return to Storage
JC7097-2.2	Secured Staging Area	Kruti Patel	10/28/15 14:38	Retrieve from Storage

## Accutest Internal Chain of Custody

Page 2 of 4

**Job Number:** JC7097  
**Account:** SECORPAE Stantec Consulting Services Inc.  
**Project:** Sunoco - Marcus Hook Facility, PA  
**Received:** 10/26/15

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7097-2.2	Kruti Patel	Secured Storage	10/28/15 15:15	Return to Storage
JC7097-2.2	Secured Storage	Jessica Adametz	11/03/15 07:33	Retrieve from Storage
JC7097-2.2	Jessica Adametz	Secured Storage	11/03/15 09:21	Return to Storage
JC7097-2.2.1	Jessica Adametz	Metals Digestion	11/03/15 08:52	Digestate from JC7097-2.2
JC7097-2.2.1	Metals Digestion	Jessica Adametz	11/03/15 08:53	Digestate from JC7097-2.2
JC7097-2.2.1	Jessica Adametz	Metals Digestate Storage	11/03/15 08:53	Return to Storage
JC7097-2.3	Secured Storage	Robert Lofrano	10/27/15 15:39	Retrieve from Storage
JC7097-2.3	Robert Lofrano		10/27/15 15:40	Subcontract
JC7097-2.5	Secured Storage	Prashant Shukla	11/01/15 17:21	Retrieve from Storage
JC7097-2.5	Prashant Shukla	GCMS3C	11/01/15 17:21	Load on Instrument
JC7097-2.5	GCMS3C	Prashant Shukla	11/02/15 11:22	Unload from Instrument
JC7097-2.5	Prashant Shukla		11/02/15 11:23	Depleted
JC7097-2.6	Secured Storage	Prashant Shukla	11/03/15 15:48	Retrieve from Storage
JC7097-2.6	Prashant Shukla	GCMS3C	11/03/15 15:48	Load on Instrument
JC7097-2.6	GCMS3C	Prashant Shukla	11/04/15 11:21	Unload from Instrument
JC7097-2.6	Prashant Shukla		11/04/15 11:23	Depleted
JC7097-3.1	Secured Storage	Albert Quayson	10/28/15 07:58	Retrieve from Storage
JC7097-3.1	Albert Quayson	Secured Storage	10/28/15 09:43	Return to Storage
JC7097-3.1.1	Albert Quayson	Organics Prep	10/28/15 08:04	Extract from JC7097-3.1
JC7097-3.1.1	Organics Prep	Nida Rizvi	10/28/15 14:57	Extract from JC7097-3.1
JC7097-3.1.1	Nida Rizvi	Extract Storage	10/28/15 14:57	Return to Storage
JC7097-3.1.1	Extract Storage	Sara Davis	11/04/15 01:06	Retrieve from Storage
JC7097-3.1.1	Sara Davis	GCMS3E	11/04/15 01:06	Load on Instrument
JC7097-3.1.1	GCMS3E	Ashley Noble	11/05/15 15:05	Unload from Instrument
JC7097-3.1.1	Ashley Noble	Extract Freezer	11/05/15 15:05	Return to Storage
JC7097-3.2	Secured Storage	Todd Shoemaker	10/28/15 11:55	Retrieve from Storage
JC7097-3.2	Todd Shoemaker	Secured Staging Area	10/28/15 11:56	Return to Storage
JC7097-3.2	Secured Staging Area	Kruti Patel	10/28/15 14:38	Retrieve from Storage
JC7097-3.2	Kruti Patel	Secured Storage	10/28/15 15:15	Return to Storage
JC7097-3.2	Secured Storage	Jessica Adametz	11/03/15 07:33	Retrieve from Storage
JC7097-3.2	Jessica Adametz	Secured Storage	11/03/15 09:21	Return to Storage
JC7097-3.2.1	Jessica Adametz	Metals Digestion	11/03/15 08:52	Digestate from JC7097-3.2
JC7097-3.2.1	Metals Digestion	Jessica Adametz	11/03/15 08:53	Digestate from JC7097-3.2
JC7097-3.2.1	Jessica Adametz	Metals Digestate Storage	11/03/15 08:53	Return to Storage
JC7097-3.3	Secured Storage	Robert Lofrano	10/27/15 15:39	Retrieve from Storage

## Accutest Internal Chain of Custody

Page 3 of 4

**Job Number:** JC7097  
**Account:** SECORPAE Stantec Consulting Services Inc.  
**Project:** Sunoco - Marcus Hook Facility, PA  
**Received:** 10/26/15

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7097-3.3	Robert Lofrano		10/27/15 15:40	Subcontract
JC7097-3.5	Secured Storage	Prashant Shukla	11/01/15 17:21	Retrieve from Storage
JC7097-3.5	Prashant Shukla	GCMS3C	11/01/15 17:21	Load on Instrument
JC7097-3.5	GCMS3C	Prashant Shukla	11/02/15 11:22	Unload from Instrument
JC7097-3.5	Prashant Shukla		11/02/15 11:23	Depleted
JC7097-4.1	Secured Storage	Albert Quayson	10/28/15 07:58	Retrieve from Storage
JC7097-4.1	Albert Quayson	Secured Storage	10/28/15 09:43	Return to Storage
JC7097-4.1.1	Albert Quayson	Organics Prep	10/28/15 08:04	Extract from JC7097-4.1
JC7097-4.1.1	Organics Prep	Nida Rizvi	10/28/15 14:57	Extract from JC7097-4.1
JC7097-4.1.1	Nida Rizvi	Extract Storage	10/28/15 14:57	Return to Storage
JC7097-4.1.1	Extract Storage	Sara Davis	11/04/15 01:06	Retrieve from Storage
JC7097-4.1.1	Sara Davis	GCMS3E	11/04/15 01:06	Load on Instrument
JC7097-4.1.1	GCMS3E	Ashley Noble	11/04/15 11:29	Unload from Instrument
JC7097-4.1.1	Ashley Noble	Extract Freezer	11/04/15 11:29	Return to Storage
JC7097-4.2	Secured Storage	Todd Shoemaker	10/28/15 11:55	Retrieve from Storage
JC7097-4.2	Todd Shoemaker	Secured Staging Area	10/28/15 11:56	Return to Storage
JC7097-4.2	Secured Staging Area	Kruti Patel	10/28/15 14:38	Retrieve from Storage
JC7097-4.2	Kruti Patel	Secured Storage	10/28/15 15:15	Return to Storage
JC7097-4.2	Secured Storage	Jessica Adametz	11/03/15 07:33	Retrieve from Storage
JC7097-4.2	Jessica Adametz	Secured Storage	11/03/15 09:21	Return to Storage
JC7097-4.2.1	Jessica Adametz	Metals Digestion	11/03/15 08:52	Digestate from JC7097-4.2
JC7097-4.2.1	Metals Digestion	Jessica Adametz	11/03/15 08:53	Digestate from JC7097-4.2
JC7097-4.2.1	Jessica Adametz	Metals Digestate Storage	11/03/15 08:53	Return to Storage
JC7097-4.3	Secured Storage	Robert Lofrano	10/27/15 15:39	Retrieve from Storage
JC7097-4.3	Robert Lofrano		10/27/15 15:40	Subcontract
JC7097-4.6	Secured Storage	Prashant Shukla	11/03/15 15:48	Retrieve from Storage
JC7097-4.6	Prashant Shukla	GCMS3C	11/03/15 15:48	Load on Instrument
JC7097-4.6	GCMS3C	Prashant Shukla	11/04/15 11:21	Unload from Instrument
JC7097-4.6	Prashant Shukla		11/04/15 11:23	Depleted
JC7097-5.1	Secured Storage	Albert Quayson	10/28/15 07:58	Retrieve from Storage
JC7097-5.1	Albert Quayson	Secured Storage	10/28/15 09:43	Return to Storage
JC7097-5.1.1	Albert Quayson	Organics Prep	10/28/15 08:04	Extract from JC7097-5.1
JC7097-5.1.1	Organics Prep	Nida Rizvi	10/28/15 14:57	Extract from JC7097-5.1
JC7097-5.1.1	Nida Rizvi	Extract Storage	10/28/15 14:57	Return to Storage
JC7097-5.1.1	Extract Storage	Sara Davis	11/04/15 01:06	Retrieve from Storage

## Accutest Internal Chain of Custody

Page 4 of 4

Job Number: JC7097  
Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA  
Received: 10/26/15

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7097-5.1.1	Sara Davis	GCMS3E	11/04/15 01:06	Load on Instrument
JC7097-5.1.1	GCMS3E	Ashley Noble	11/04/15 11:29	Unload from Instrument
JC7097-5.1.1	Ashley Noble	Extract Freezer	11/04/15 11:29	Return to Storage
JC7097-5.2	Secured Storage	Todd Shoemaker	10/28/15 11:55	Retrieve from Storage
JC7097-5.2	Todd Shoemaker	Secured Staging Area	10/28/15 11:56	Return to Storage
JC7097-5.2	Secured Staging Area	Kruti Patel	10/28/15 14:38	Retrieve from Storage
JC7097-5.2	Kruti Patel	Secured Storage	10/28/15 15:15	Return to Storage
JC7097-5.2	Secured Storage	Jessica Adametz	11/03/15 07:33	Retrieve from Storage
JC7097-5.2	Jessica Adametz	Secured Storage	11/03/15 09:21	Return to Storage
JC7097-5.2.1	Jessica Adametz	Metals Digestion	11/03/15 08:52	Digestate from JC7097-5.2
JC7097-5.2.1	Metals Digestion	Jessica Adametz	11/03/15 08:53	Digestate from JC7097-5.2
JC7097-5.2.1	Jessica Adametz	Metals Digestate Storage	11/03/15 08:53	Return to Storage
JC7097-5.3	Secured Storage	Robert Lofrano	10/27/15 15:39	Retrieve from Storage
JC7097-5.3	Robert Lofrano		10/27/15 15:40	Subcontract
JC7097-5.4	Secured Storage	Benjamin Mendez	11/06/15 16:40	Retrieve from Storage
JC7097-5.4	Benjamin Mendez	Secured Storage	11/06/15 16:40	Return to Storage



## GC/MS Volatiles

---

### QC Data Summaries

---

**Includes the following where applicable:**

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries



**Method Blank Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5694-MB	3C124673.D	1	11/02/15	PS	n/a	n/a	V3C5694

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-1, JC7097-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.17	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.21	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
110-54-3	Hexane	ND	5.0	0.39	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	0.11	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.15	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.19	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.19	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	97% 70-122%
17060-07-0	1,2-Dichloroethane-D4	95% 68-124%
2037-26-5	Toluene-D8	100% 77-125%
460-00-4	4-Bromofluorobenzene	98% 72-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

**Method Blank Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5698-MB	3C124747.D	1	11/03/15	PS	n/a	n/a	V3C5698

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-2, JC7097-4

6.1.2  
6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.17	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.21	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
110-54-3	Hexane	ND	5.0	0.39	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	0.11	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.15	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.19	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.19	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	99%
17060-07-0	1,2-Dichloroethane-D4	96%
2037-26-5	Toluene-D8	101%
460-00-4	4-Bromofluorobenzene	99%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

**Method Blank Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD9618-MB2	D235584.D	1	11/06/15	BM	n/a	n/a	VD9618

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	25	6.7	ug/kg	
135-98-8	sec-Butylbenzene	ND	100	8.5	ug/kg	
98-06-6	tert-Butylbenzene	ND	100	11	ug/kg	
110-82-7	Cyclohexane	ND	100	16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	6.7	ug/kg	
100-41-4	Ethylbenzene	ND	50	8.2	ug/kg	
110-54-3	Hexane	ND	250	19	ug/kg	
98-82-8	Isopropylbenzene	ND	100	5.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	7.7	ug/kg	
91-20-3	Naphthalene	ND	250	9.5	ug/kg	
108-88-3	Toluene	ND	50	10	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	100	10	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	100	9.6	ug/kg	
1330-20-7	Xylene (total)	ND	50	14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	103%
17060-07-0	1,2-Dichloroethane-D4	101%
2037-26-5	Toluene-D8	99%
460-00-4	4-Bromofluorobenzene	104%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

**Method Blank Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD9618-MB	D235562.D	1	11/06/15	BM	n/a	n/a	VD9618

The QC reported here applies to the following samples:

Method: SW846 8260C

VD9618-BS, JC7291-1MS, JC7291-1MSD

6.1.4  
6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	25	6.7	ug/kg	
135-98-8	sec-Butylbenzene	ND	100	8.5	ug/kg	
98-06-6	tert-Butylbenzene	ND	100	11	ug/kg	
110-82-7	Cyclohexane	ND	100	16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	6.7	ug/kg	
100-41-4	Ethylbenzene	ND	50	8.2	ug/kg	
110-54-3	Hexane	ND	250	19	ug/kg	
98-82-8	Isopropylbenzene	ND	100	5.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	7.7	ug/kg	
91-20-3	Naphthalene	ND	250	9.5	ug/kg	
108-88-3	Toluene	ND	50	10	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	100	10	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	100	9.6	ug/kg	
1330-20-7	Xylene (total)	ND	50	14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	103%
17060-07-0	1,2-Dichloroethane-D4	102%
2037-26-5	Toluene-D8	99%
460-00-4	4-Bromofluorobenzene	104%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

**Blank Spike Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5694-BS	3C124674.D	1	11/02/15	PS	n/a	n/a	V3C5694

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-1, JC7097-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	44.8	90	77-122
135-98-8	sec-Butylbenzene	50	45.0	90	70-125
98-06-6	tert-Butylbenzene	50	46.6	93	70-126
110-82-7	Cyclohexane	50	40.3	81	66-131
107-06-2	1,2-Dichloroethane	50	49.6	99	77-140
100-41-4	Ethylbenzene	50	43.3	87	75-121
110-54-3	Hexane	50	34.8	70	37-137
98-82-8	Isopropylbenzene	50	44.3	89	70-126
1634-04-4	Methyl Tert Butyl Ether	100	89.3	89	77-121
91-20-3	Naphthalene	50	50.4	101	74-126
108-88-3	Toluene	50	45.5	91	75-123
95-63-6	1,2,4-Trimethylbenzene	50	46.2	92	75-126
108-67-8	1,3,5-Trimethylbenzene	50	44.5	89	72-124
1330-20-7	Xylene (total)	150	134	89	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	70-122%
17060-07-0	1,2-Dichloroethane-D4	99%	68-124%
2037-26-5	Toluene-D8	101%	77-125%
460-00-4	4-Bromofluorobenzene	101%	72-130%

\* = Outside of Control Limits.

**Blank Spike Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3C5698-BS	3C124748.D	1	11/03/15	PS	n/a	n/a	V3C5698

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-2, JC7097-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	43.9	88	77-122
135-98-8	sec-Butylbenzene	50	46.7	93	70-125
98-06-6	tert-Butylbenzene	50	47.6	95	70-126
110-82-7	Cyclohexane	50	40.3	81	66-131
107-06-2	1,2-Dichloroethane	50	45.7	91	77-140
100-41-4	Ethylbenzene	50	42.4	85	75-121
110-54-3	Hexane	50	27.8	56	37-137
98-82-8	Isopropylbenzene	50	46.3	93	70-126
1634-04-4	Methyl Tert Butyl Ether	100	86.0	86	77-121
91-20-3	Naphthalene	50	45.3	91	74-126
108-88-3	Toluene	50	44.6	89	75-123
95-63-6	1,2,4-Trimethylbenzene	50	47.7	95	75-126
108-67-8	1,3,5-Trimethylbenzene	50	45.7	91	72-124
1330-20-7	Xylene (total)	150	131	87	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	70-122%
17060-07-0	1,2-Dichloroethane-D4	97%	68-124%
2037-26-5	Toluene-D8	103%	77-125%
460-00-4	4-Bromofluorobenzene	102%	72-130%

\* = Outside of Control Limits.

**Blank Spike Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD9618-BS	D235563.D	1	11/06/15	BM	n/a	n/a	VD9618

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2450	98	77-122
135-98-8	sec-Butylbenzene	2500	2300	92	70-125
98-06-6	tert-Butylbenzene	2500	2300	92	70-126
110-82-7	Cyclohexane	2500	2360	94	66-131
107-06-2	1,2-Dichloroethane	2500	2320	93	77-140
100-41-4	Ethylbenzene	2500	2310	92	75-121
110-54-3	Hexane	2500	2010	80	37-137
98-82-8	Isopropylbenzene	2500	2460	98	70-126
1634-04-4	Methyl Tert Butyl Ether	5000	4720	94	77-121
91-20-3	Naphthalene	2500	2430	97	74-126
108-88-3	Toluene	2500	2370	95	75-123
95-63-6	1,2,4-Trimethylbenzene	2500	2470	99	75-126
108-67-8	1,3,5-Trimethylbenzene	2500	2400	96	72-124
1330-20-7	Xylene (total)	7500	7130	95	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	70-122%
17060-07-0	1,2-Dichloroethane-D4	105%	68-124%
2037-26-5	Toluene-D8	101%	77-125%
460-00-4	4-Bromofluorobenzene	102%	72-130%

\* = Outside of Control Limits.

**Matrix Spike Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC7193-2MS	3C124756.D	1	11/03/15	PS	n/a	n/a	V3C5698
JC7193-2	3C124751.D	1	11/03/15	PS	n/a	n/a	V3C5698

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-2, JC7097-4

CAS No.	Compound	JC7193-2		Spike	MS	MS	Limits
		ug/kg	Q	ug/kg	ug/kg	%	
71-43-2	Benzene	ND		57.2	49.9	87	48-136
135-98-8	sec-Butylbenzene	ND		57.2	55.7	97	23-151
98-06-6	tert-Butylbenzene	ND		57.2	56.8	99	30-149
110-82-7	Cyclohexane	ND		57.2	48.0	84	22-154
107-06-2	1,2-Dichloroethane	ND		57.2	50.9	89	56-140
100-41-4	Ethylbenzene	ND		57.2	49.5	87	34-145
110-54-3	Hexane	ND		57.2	35.8	63	10-157
98-82-8	Isopropylbenzene	ND		57.2	54.9	96	36-145
1634-04-4	Methyl Tert Butyl Ether	ND		114.4	90.0	79	54-129
91-20-3	Naphthalene	ND		57.2	51.7	90	12-160
108-88-3	Toluene	ND		57.2	51.3	90	40-141
95-63-6	1,2,4-Trimethylbenzene	ND		57.2	56.2	98	23-152
108-67-8	1,3,5-Trimethylbenzene	ND		57.2	54.2	95	26-150
1330-20-7	Xylene (total)	ND		172	153	89	34-146

CAS No.	Surrogate Recoveries	MS	JC7193-2	Limits
1868-53-7	Dibromofluoromethane	99%	105%	70-122%
17060-07-0	1,2-Dichloroethane-D4	91%	107%	68-124%
2037-26-5	Toluene-D8	101%	101%	77-125%
460-00-4	4-Bromofluorobenzene	101%	98%	72-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC7218-1MS	3C124675.D	1	11/02/15	PS	n/a	n/a	V3C5694
JC7218-1MSD	3C124676.D	1	11/02/15	PS	n/a	n/a	V3C5694
JC7218-1	3C124678.D	1	11/02/15	PS	n/a	n/a	V3C5694

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-1, JC7097-3

CAS No.	Compound	JC7218-1		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
71-43-2	Benzene	ND		63.9	54.2	85	63.9	55.5	87	2	48-136/30
135-98-8	sec-Butylbenzene	ND		63.9	50.7	79	63.9	51.0	80	1	23-151/34
98-06-6	tert-Butylbenzene	ND		63.9	58.7	92	63.9	58.9	92	0	30-149/34
110-82-7	Cyclohexane	ND		63.9	51.3	80	63.9	52.9	83	3	22-154/33
107-06-2	1,2-Dichloroethane	ND		63.9	54.6	86	63.9	54.5	85	0	56-140/24
100-41-4	Ethylbenzene	ND		63.9	52.2	82	63.9	53.6	84	3	34-145/29
110-54-3	Hexane	ND		63.9	25.9	41	63.9	27.2	43	5	10-157/33
98-82-8	Isopropylbenzene	ND		63.9	53.4	84	63.9	53.6	84	0	36-145/33
1634-04-4	Methyl Tert Butyl Ether	ND		128	97.1	76	128	97.8	76	1	54-129/25
91-20-3	Naphthalene	ND		63.9	49.5	78	63.9	49.0	77	1	12-160/33
108-88-3	Toluene	ND		63.9	54.9	86	63.9	56.3	88	3	40-141/30
95-63-6	1,2,4-Trimethylbenzene	ND		63.9	52.9	83	63.9	54.5	85	3	23-152/31
108-67-8	1,3,5-Trimethylbenzene	ND		63.9	55.4	87	63.9	55.5	87	0	26-150/32
1330-20-7	Xylene (total)	ND		192	163	85	192	165	86	1	34-146/29

CAS No.	Surrogate Recoveries	MS	MSD	JC7218-1	Limits
1868-53-7	Dibromofluoromethane	98%	97%	99%	70-122%
17060-07-0	1,2-Dichloroethane-D4	90%	90%	100%	68-124%
2037-26-5	Toluene-D8	101%	101%	100%	77-125%
460-00-4	4-Bromofluorobenzene	100%	101%	98%	72-130%

\* = Outside of Control Limits.

6.4.1  
6

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC7291-1MS	D235573.D	1	11/06/15	BM	n/a	n/a	VD9618
JC7291-1MSD	D235574.D	1	11/06/15	BM	n/a	n/a	VD9618
JC7291-1 <sup>a</sup>	D235576.D	1	11/06/15	BM	n/a	n/a	VD9618

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-5

CAS No.	Compound	JC7291-1		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
71-43-2	Benzene	ND		5920	6190	105	5920	5830	99	6	48-136/30
135-98-8	sec-Butylbenzene	2330		5920	8800	109	5920	8170	99	7	23-151/34
98-06-6	tert-Butylbenzene	212	J	5920	6580	108	5920	6180	101	6	30-149/34
110-82-7	Cyclohexane	172	J	5920	6940	114	5920	6230	102	11	22-154/33
107-06-2	1,2-Dichloroethane	ND		5920	5830	99	5920	5580	94	4	56-140/24
100-41-4	Ethylbenzene	56.8	J	5920	6180	103	5920	5860	98	5	34-145/29
110-54-3	Hexane	ND		5920	5680	96	5920	5150	87	10	10-157/33
98-82-8	Isopropylbenzene	1990		5920	8180	105	5920	7800	98	5	36-145/33
1634-04-4	Methyl Tert Butyl Ether	ND		11800	12500	106	11800	11400	96	9	54-129/25
91-20-3	Naphthalene	214	J	5920	5980	97	5920	5630	92	6	12-160/33
108-88-3	Toluene	ND		5920	6280	106	5920	5910	100	6	40-141/30
95-63-6	1,2,4-Trimethylbenzene	46.8	J	5920	6360	107	5920	5980	100	6	23-152/31
108-67-8	1,3,5-Trimethylbenzene	ND		5920	6310	107	5920	5930	100	6	26-150/32
1330-20-7	Xylene (total)	32.0	J	17800	19500	110	17800	18700	105	4	34-146/29

CAS No.	Surrogate Recoveries	MS	MSD	JC7291-1	Limits
1868-53-7	Dibromofluoromethane	101%	100%	99%	70-122%
17060-07-0	1,2-Dichloroethane-D4	101%	101%	98%	68-124%
2037-26-5	Toluene-D8	104%	102%	100%	77-125%
460-00-4	4-Bromofluorobenzene	91%	93%	90%	72-130%

(a) Dilution required due to matrix interference.

\* = Outside of Control Limits.

6.4.2  
6

**Duplicate Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC7193-1DUP	3C124754.D	1	11/03/15	PS	n/a	n/a	V3C5698
JC7193-1	3C124750.D	1	11/03/15	PS	n/a	n/a	V3C5698

The QC reported here applies to the following samples:

Method: SW846 8260C

JC7097-2, JC7097-4

CAS No.	Compound	JC7193-1		DUP		RPD	Limits
		ug/kg	Q	ug/kg	Q		
71-43-2	Benzene	ND		ND		nc	17
135-98-8	sec-Butylbenzene	ND		ND		nc	30
98-06-6	tert-Butylbenzene	ND		ND		nc	30
110-82-7	Cyclohexane	ND		ND		nc	30
107-06-2	1,2-Dichloroethane	ND		0.29	J	200* <sup>a</sup>	30
100-41-4	Ethylbenzene	ND		ND		nc	23
110-54-3	Hexane	ND		ND		nc	30
98-82-8	Isopropylbenzene	ND		ND		nc	22
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	30
91-20-3	Naphthalene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	22
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	30
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	21

CAS No.	Surrogate Recoveries	DUP	JC7193-1	Limits
1868-53-7	Dibromofluoromethane	104%	104%	70-122%
17060-07-0	1,2-Dichloroethane-D4	106%	105%	68-124%
2037-26-5	Toluene-D8	101%	101%	77-125%
460-00-4	4-Bromofluorobenzene	100%	99%	72-130%

(a) Outside control limits possibly due to sample non-homogeneity.

\* = Outside of Control Limits.

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	V3C5689-BFB	Injection Date:	10/30/15
Lab File ID:	3C124563.D	Injection Time:	01:06
Instrument ID:	GCMS3C		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	12872	16.8	Pass
75	30.0 - 60.0% of mass 95	35984	46.8	Pass
95	Base peak, 100% relative abundance	76829	100.0	Pass
96	5.0 - 9.0% of mass 95	5119	6.66	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	63749	83.0	Pass
175	5.0 - 9.0% of mass 174	4585	5.97	(7.19) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	62802	81.7	(98.5) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	4313	5.61	(6.87) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3C5689-IC5689	3C124564.D	10/30/15	01:57	00:51	Initial cal 0.2
V3C5689-IC5689	3C124565.D	10/30/15	02:25	01:19	Initial cal 0.5
V3C5689-IC5689	3C124566.D	10/30/15	02:52	01:46	Initial cal 1
V3C5689-IC5689	3C124567.D	10/30/15	03:20	02:14	Initial cal 2
V3C5689-IC5689	3C124568.D	10/30/15	03:48	02:42	Initial cal 4
V3C5689-IC5689	3C124569.D	10/30/15	04:15	03:09	Initial cal 8
V3C5689-IC5689	3C124570.D	10/30/15	04:43	03:37	Initial cal 20
V3C5689-ICC5689	3C124571.D	10/30/15	05:11	04:05	Initial cal 50
V3C5689-IC5689	3C124572.D	10/30/15	05:38	04:32	Initial cal 100
V3C5689-IC5689	3C124573.D	10/30/15	06:06	05:00	Initial cal 200
V3C5689-ICV5689	3C124576.D	10/30/15	07:30	06:24	Initial cal verification 50

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	V3C5694-BFB	Injection Date:	11/02/15
Lab File ID:	3C124670.D	Injection Time:	00:38
Instrument ID:	GCMS3C		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	12606	17.8	Pass
75	30.0 - 60.0% of mass 95	34323	48.4	Pass
95	Base peak, 100% relative abundance	70928	100.0	Pass
96	5.0 - 9.0% of mass 95	4709	6.64	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	60491	85.3	Pass
175	5.0 - 9.0% of mass 174	4436	6.25	(7.33) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	57888	81.6	(95.7) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3775	5.32	(6.52) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3C5694-CC5689	3C124671.D	11/02/15	01:06	00:28	Continuing cal 50
V3C5694-MB	3C124673.D	11/02/15	02:01	01:23	Method Blank
V3C5694-BS	3C124674.D	11/02/15	02:28	01:50	Blank Spike
JC7218-1MS	3C124675.D	11/02/15	02:56	02:18	Matrix Spike
JC7218-1MSD	3C124676.D	11/02/15	03:23	02:45	Matrix Spike Duplicate
JC7218-1	3C124678.D	11/02/15	04:19	03:41	(used for QC only; not part of job JC7097)
ZZZZZZ	3C124679.D	11/02/15	04:46	04:08	(unrelated sample)
ZZZZZZ	3C124680.D	11/02/15	05:14	04:36	(unrelated sample)
ZZZZZZ	3C124681.D	11/02/15	05:42	05:04	(unrelated sample)
ZZZZZZ	3C124682.D	11/02/15	06:09	05:31	(unrelated sample)
ZZZZZZ	3C124683.D	11/02/15	06:37	05:59	(unrelated sample)
ZZZZZZ	3C124684.D	11/02/15	07:04	06:26	(unrelated sample)
ZZZZZZ	3C124685.D	11/02/15	07:32	06:54	(unrelated sample)
ZZZZZZ	3C124686.D	11/02/15	08:00	07:22	(unrelated sample)
ZZZZZZ	3C124687.D	11/02/15	08:27	07:49	(unrelated sample)
JC7097-1	3C124690.D	11/02/15	09:50	09:12	MH386-1-20151026(3')
JC7097-3	3C124692.D	11/02/15	10:45	10:07	MH386-3-20151026(3')

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	V3C5698-BFB	Injection Date:	11/03/15
Lab File ID:	3C124744.D	Injection Time:	11:53
Instrument ID:	GCMS3C		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	11327	17.7	Pass
75	30.0 - 60.0% of mass 95	30299	47.4	Pass
95	Base peak, 100% relative abundance	63939	100.0	Pass
96	5.0 - 9.0% of mass 95	4459	6.97	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	55520	86.8	Pass
175	5.0 - 9.0% of mass 174	3963	6.20	(7.14) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	54283	84.9	(97.8) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3374	5.28	(6.22) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3C5698-CC5689	3C124745.D	11/03/15	12:24	00:31	Continuing cal 20
V3C5698-MB	3C124747.D	11/03/15	13:30	01:37	Method Blank
V3C5698-BS	3C124748.D	11/03/15	13:57	02:04	Blank Spike
JC7193-1	3C124750.D	11/03/15	14:52	02:59	(used for QC only; not part of job JC7097)
JC7193-2	3C124751.D	11/03/15	15:20	03:27	(used for QC only; not part of job JC7097)
ZZZZZZ	3C124752.D	11/03/15	15:48	03:55	(unrelated sample)
ZZZZZZ	3C124753.D	11/03/15	16:16	04:23	(unrelated sample)
JC7193-1DUP	3C124754.D	11/03/15	16:44	04:51	Duplicate
JC7097-2	3C124755.D	11/03/15	17:11	05:18	MH386-2-20151026(3')
JC7193-2MS	3C124756.D	11/03/15	17:39	05:46	Matrix Spike
ZZZZZZ	3C124758.D	11/03/15	18:34	06:41	(unrelated sample)
ZZZZZZ	3C124759.D	11/03/15	19:02	07:09	(unrelated sample)
ZZZZZZ	3C124760.D	11/03/15	19:30	07:37	(unrelated sample)
ZZZZZZ	3C124761.D	11/03/15	19:57	08:04	(unrelated sample)
ZZZZZZ	3C124762.D	11/03/15	20:25	08:32	(unrelated sample)
ZZZZZZ	3C124763.D	11/03/15	20:52	08:59	(unrelated sample)
ZZZZZZ	3C124764.D	11/03/15	21:21	09:28	(unrelated sample)
ZZZZZZ	3C124765.D	11/03/15	21:48	09:55	(unrelated sample)
ZZZZZZ	3C124766.D	11/03/15	22:16	10:23	(unrelated sample)
ZZZZZZ	3C124767.D	11/03/15	22:43	10:50	(unrelated sample)
JC7097-4	3C124768.D	11/03/15	23:11	11:18	MH386-4-20151026(3')

**Instrument Performance Check (BFB)**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VD9588-BFB	Injection Date:	10/15/15
Lab File ID:	D234784.D	Injection Time:	11:21
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	20776	21.9	Pass
75	30.0 - 60.0% of mass 95	49408	52.2	Pass
95	Base peak, 100% relative abundance	94693	100.0	Pass
96	5.0 - 9.0% of mass 95	6389	6.75	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	77493	81.8	Pass
175	5.0 - 9.0% of mass 174	5909	6.24	(7.63) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	76122	80.4	(98.2) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	4951	5.23	(6.50) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD9588-IC9588	D234785.D	10/15/15	11:55	00:34	Initial cal 0.2
VD9588-IC9588	D234786.D	10/15/15	12:25	01:04	Initial cal 0.5
VD9588-IC9588	D234787.D	10/15/15	12:56	01:35	Initial cal 1.0
VD9588-IC9588	D234788.D	10/15/15	13:26	02:05	Initial cal 2.0
VD9588-IC9588	D234789.D	10/15/15	13:57	02:36	Initial cal 4.0
VD9588-IC9588	D234790.D	10/15/15	14:28	03:07	Initial cal 8.0
VD9588-IC9588	D234791.D	10/15/15	14:58	03:37	Initial cal 20
VD9588-ICC9588	D234792.D	10/15/15	15:29	04:08	Initial cal 50
VD9588-IC9588	D234793.D	10/15/15	16:00	04:39	Initial cal 100
VD9588-IC9588	D234794.D	10/15/15	16:30	05:09	Initial cal 200
VD9588-ICV9588	D234797.D	10/15/15	18:02	06:41	Initial cal verification 50

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VD9618-BFB	Injection Date:	11/06/15
Lab File ID:	D235556.D	Injection Time:	07:04
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	15615	20.3	Pass
75	30.0 - 60.0% of mass 95	38397	50.0	Pass
95	Base peak, 100% relative abundance	76794	100.0	Pass
96	5.0 - 9.0% of mass 95	5262	6.85	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	61037	79.5	Pass
175	5.0 - 9.0% of mass 174	4566	5.95	(7.48) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	59770	77.8	(97.9) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3952	5.15	(6.61) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD9618-CC9588	D235557.D	11/06/15	07:45	00:41	Continuing cal 20
VD9618-MB	D235562.D	11/06/15	10:47	03:43	Method Blank
ZZZZZZ	D235562A.D	11/06/15	10:47	03:43	(unrelated sample)
VD9618-BS	D235563.D	11/06/15	11:18	04:14	Blank Spike
ZZZZZZ	D235566.D	11/06/15	12:50	05:46	(unrelated sample)
ZZZZZZ	D235568.D	11/06/15	13:51	06:47	(unrelated sample)
ZZZZZZ	D235570.D	11/06/15	14:54	07:50	(unrelated sample)
ZZZZZZ	D235571.D	11/06/15	15:25	08:21	(unrelated sample)
ZZZZZZ	D235572.D	11/06/15	15:55	08:51	(unrelated sample)
JC7291-1MS	D235573.D	11/06/15	16:26	09:22	Matrix Spike
JC7291-1MSD	D235574.D	11/06/15	16:56	09:52	Matrix Spike Duplicate
JC7291-1	D235576.D	11/06/15	17:58	10:54	(used for QC only; not part of job JC7097)
ZZZZZZ	D235577.D	11/06/15	18:28	11:24	(unrelated sample)
ZZZZZZ	D235578.D	11/06/15	18:59	11:55	(unrelated sample)

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	VD9618-BFB2	Injection Date:	11/06/15
Lab File ID:	D235581.D	Injection Time:	20:30
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	16164	20.7	Pass
75	30.0 - 60.0% of mass 95	39123	50.1	Pass
95	Base peak, 100% relative abundance	78131	100.0	Pass
96	5.0 - 9.0% of mass 95	5473	7.00	Pass
173	Less than 2.0% of mass 174	194	0.25	(0.32) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	61541	78.8	Pass
175	5.0 - 9.0% of mass 174	4617	5.91	(7.50) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	59845	76.6	(97.2) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	4029	5.16	(6.73) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD9618-CC9588	D235582.D	11/06/15	21:01	00:31	Continuing cal 50
VD9618-MB2	D235584.D	11/06/15	22:02	01:32	Method Blank
JC7097-5	D235585.D	11/06/15	22:32	02:02	MH386-5-20151026(3')
ZZZZZZ	D235586.D	11/06/15	23:03	02:33	(unrelated sample)
ZZZZZZ	D235587.D	11/06/15	23:33	03:03	(unrelated sample)
ZZZZZZ	D235588.D	11/07/15	00:04	03:34	(unrelated sample)
ZZZZZZ	D235589.D	11/07/15	00:34	04:04	(unrelated sample)
ZZZZZZ	D235590.D	11/07/15	01:04	04:34	(unrelated sample)
ZZZZZZ	D235592.D	11/07/15	02:05	05:35	(unrelated sample)
ZZZZZZ	D235593.D	11/07/15	02:35	06:05	(unrelated sample)
ZZZZZZ	D235594.D	11/07/15	03:06	06:36	(unrelated sample)
ZZZZZZ	D235595.D	11/07/15	03:36	07:06	(unrelated sample)

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	V3C5694-CC5689	Injection Date:	11/02/15
Lab File ID:	3C124671.D	Injection Time:	01:06
Instrument ID:	GCMS3C	Method:	SW846 8260C

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Check Std	97557	7.08	252200	9.33	296171	10.24
Upper Limit <sup>a</sup>	195114	7.58	504400	9.83	592342	10.74
Lower Limit <sup>b</sup>	48779	6.58	126100	8.83	148086	9.74

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
V3C5694-MB	82552	7.08	237052	9.33	279415	10.25
V3C5694-BS	107781	7.07	248196	9.33	296978	10.24
JC7218-1MS	88628	7.07	255550	9.33	305988	10.25
JC7218-1MSD	81887	7.09	251361	9.33	300002	10.25
JC7218-1	90881	7.08	241169	9.33	288764	10.25
ZZZZZZ	90978	7.08	233810	9.33	285242	10.25
ZZZZZZ	91818	7.08	220123	9.33	267663	10.25
ZZZZZZ	91500	7.08	221261	9.33	269797	10.25
ZZZZZZ	107107	7.08	248238	9.33	304195	10.24
ZZZZZZ	87643	7.07	221866	9.33	274517	10.25
ZZZZZZ	80854	7.07	217139	9.33	265676	10.25
ZZZZZZ	102710	7.07	240628	9.33	294725	10.24
ZZZZZZ	96789	7.08	233696	9.33	287850	10.24
ZZZZZZ	86848	7.08	225572	9.33	279305	10.25
JC7097-1	113443	7.08	254616	9.33	311209	10.24
JC7097-3	104616	7.07	266739	9.33	315960	10.24

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	V3C5698-CC5689	Injection Date:	11/03/15
Lab File ID:	3C124745.D	Injection Time:	12:24
Instrument ID:	GCMS3C	Method:	SW846 8260C

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	RT
V3C5698-MB	77828	7.08	219639	9.33	262023	10.24
V3C5698-BS	88389	7.08	231673	9.33	281549	10.24
JC7193-1	113700	7.09	232189	9.33	279659	10.25
JC7193-2	108937	7.09	230431	9.33	278937	10.25
ZZZZZZ	98338	7.09	228691	9.33	275812	10.25
ZZZZZZ	100838	7.08	217740	9.33	263928	10.25
JC7193-1DUP	97440	7.08	219561	9.33	268743	10.25
JC7097-2	106257	7.08	215788	9.33	260153	10.25
JC7193-2MS	85057	7.09	246033	9.33	292855	10.25
ZZZZZZ	107890	7.09	236304	9.33	283377	10.24
ZZZZZZ	97556	7.09	241371	9.33	283060	10.25
ZZZZZZ	88998	7.07	212226	9.33	256160	10.25
ZZZZZZ	88543	7.08	217338	9.33	262828	10.25
ZZZZZZ	93274	7.08	221175	9.33	261987	10.25
ZZZZZZ	93626	7.09	221998	9.33	270000	10.25
ZZZZZZ	91599	7.08	215638	9.33	265889	10.25
ZZZZZZ	99606	7.08	211631	9.33	257748	10.25
ZZZZZZ	87164	7.08	197293	9.33	244858	10.25
ZZZZZZ	89833	7.08	219427	9.33	266582	10.25
JC7097-4	93088	7.08	219333	9.33	272199	10.25

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VD9618-CC9588	Injection Date:	11/06/15
Lab File ID:	D235557.D	Injection Time:	07:45
Instrument ID:	GCMSD	Method:	SW846 8260C

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Check Std	108464	7.94	196968	10.13	275828	11.05
Upper Limit <sup>a</sup>	216928	8.44	393936	10.63	551656	11.55
Lower Limit <sup>b</sup>	54232	7.44	98484	9.63	137914	10.55

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
VD9618-MB	106385	7.96	210341	10.13	298976	11.06
ZZZZZZ	106385	7.96	210341	10.13	298976	11.06
VD9618-BS	108224	7.96	200775	10.13	288762	11.06
ZZZZZZ	104996	7.96	192712	10.12	272950	11.06
ZZZZZZ	113740	7.97	202641	10.13	292274	11.06
ZZZZZZ	118445	7.96	223403	10.13	311896	11.06
ZZZZZZ	141739	8.07	211805	10.13	293580	11.05
ZZZZZZ	130562	8.08	212289	10.13	293103	11.05
JC7291-1MS	117749	7.98	200045	10.12	275866	11.05
JC7291-1MSD	118972	7.98	219289	10.13	307478	11.05
JC7291-1	109325	7.96	213547	10.13	296551	11.05
ZZZZZZ	108502	7.94	226145	10.13	311605	11.06
ZZZZZZ	112553	7.97	226666	10.13	311684	11.06

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VD9618-CC9588	Injection Date:	11/06/15
Lab File ID:	D235582.D	Injection Time:	21:01
Instrument ID:	GCMSD	Method:	SW846 8260C

	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
Lab Sample ID	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
Check Std	112635	7.97	212240	10.13	301183	11.05	288517	14.39	169588	16.97
Upper Limit <sup>a</sup>	225270	8.47	424480	10.63	602366	11.55	577034	14.89	339176	17.47
Lower Limit <sup>b</sup>	56318	7.47	106120	9.63	150592	10.55	144259	13.89	84794	16.47
VD9618-MB2	112800	7.96	208530	10.13	295613	11.06	273790	14.39	156742	16.97
JC7097-5 <sup>c</sup>	104333	7.96	191448	10.12	271614	11.06	256033	14.39	157353	16.97
ZZZZZZ	110113	7.96	207622	10.12	289801	11.06	276382	14.39	173592	16.97
ZZZZZZ	115452	7.96	223146	10.13	311409	11.06	292067	14.39	180682	16.97
ZZZZZZ	113548	7.96	214042	10.12	298515	11.05	283744	14.39	175895	16.97
ZZZZZZ	112850	7.97	216776	10.13	300860	11.05	289374	14.39	178804	16.97
ZZZZZZ	119677	8.00	219209	10.13	309102	11.06	373118	14.39	219327	16.97
ZZZZZZ	108561	7.97	220344	10.13	303384	11.06	283134	14.39	170047	16.97
ZZZZZZ	111641	7.97	218654	10.12	302134	11.06	285495	14.39	171223	16.97
ZZZZZZ	768086*	7.96	347527	10.13	458712	11.06	486417	14.40	254827	16.98
ZZZZZZ	431779*	7.93	288551	10.13	375279	11.05	445524	14.40	248927	16.97

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

(c) Dilution required due to matrix interference.

# Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Method: SW846 8260C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JC7097-1	3C124690.D	102	101	105	98
JC7097-2	3C124755.D	105	104	103	97
JC7097-3	3C124692.D	99	100	102	94
JC7097-4	3C124768.D	107	106	100	99
JC7097-5	D235585.D	103	104	99	101
JC7193-1DUP	3C124754.D	104	106	101	100
JC7193-2MS	3C124756.D	99	91	101	101
JC7218-1MS	3C124675.D	98	90	101	100
JC7218-1MSD	3C124676.D	97	90	101	101
JC7291-1MS	D235573.D	101	101	104	91
JC7291-1MSD	D235574.D	100	101	102	93
V3C5694-BS	3C124674.D	101	99	101	101
V3C5694-MB	3C124673.D	97	95	100	98
V3C5698-BS	3C124748.D	101	97	103	102
V3C5698-MB	3C124747.D	99	96	101	99
VD9618-BS	D235563.D	103	105	101	102
VD9618-MB2	D235584.D	103	101	99	104
VD9618-MB	D235562.D	103	102	99	104

Surrogate  
Compounds

Recovery  
Limits

S1 = Dibromofluoromethane

70-122%

S2 = 1,2-Dichloroethane-D4

68-124%

S3 = Toluene-D8

77-125%

S4 = 4-Bromofluorobenzene

72-130%

6.8.1  
6

**Initial Calibration Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample: V3C5689-ICC5689

Lab FileID: 3C124571.D

## Response Factor Report MS3C

Method : C:\MSDCHEM\1\METHODS\M3C5689.M (RTE Integrator)

Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um

Last Update : Fri Oct 30 16:49:39 2015

Response via : Initial Calibration

## Calibration Files

```

8  =3C124569.D  4   =3C124568.D  0.5  =3C124565.D  50  =3C124571.D
100 =3C124572.D  1   =3C124566.D  200 =3C124573.D  20  =3C124570.D
2   =3C124567.D  0.2  =3C124564.D      =          =

```

## Compound

	8	4	0.5	50	100	1	200	20	2	0.2	Avg	%RSD
--	---	---	-----	----	-----	---	-----	----	---	-----	-----	------

1) I	Tert Butyl Alcohol-d9	-----ISTD-----											
2)	1,4-dioxane												
		0.117	0.115	0.115	0.123	0.111	0.121	0.110	0.116	4.04			
3)	tertiary butyl alcohol												
		1.300	1.345	1.671	1.271	1.407	1.539	1.268	1.457	1.363	1.402	9.57	
4)	ethanol												
									0.000	-1.00			
5) I	pentafluorobenzene	-----ISTD-----											
6)	propene												
									0.000	-1.00			
7)	chlorodifluoromethane												
		0.970	0.952	0.928	0.895	0.866	0.981	0.951	0.935	4.43			
8)	dichlorodifluoromethane												
		1.207	1.155	1.516	1.099	1.069	1.363	1.021	1.184	1.198	1.201	12.75	
9)	chloromethane												
		0.752	0.718	0.669	0.710	0.980	0.700	0.734	0.729	0.749	12.87		
10)	vinyl chloride												
		0.766	0.759	0.852	0.743	0.768	0.824	0.768	0.785	0.731	0.980	0.798	9.21
11)	bromomethane												
		0.466	0.474	0.720	0.466	0.489	0.561	0.497	0.481	0.497	0.517	15.75	
12)	chloroethane												
		0.389	0.393	0.576	0.371	0.386	0.483	0.393	0.396	0.391	0.420	15.88	
13)	1,3-butadiene												
										0.000	-1.00		
14)	Vinyl Bromide												
										0.000	-1.00		
15)	Pentane												
										0.000	-1.00		
16)	trichlorofluoromethane												
		0.877	0.868	1.106	0.784	0.801	1.008	0.792	0.861	0.900	1.150	0.915	14.21
17)	ethyl ether												
		0.201	0.205	0.255	0.206	0.217	0.241	0.206	0.222	0.236	0.221	8.64	
18)	acrolein												
		0.063	0.071	0.079	0.062	0.062	0.071	0.060	0.067	0.074	0.068	9.53	
19)	1,1-dichloroethene												
		0.614	0.611	0.802	0.633	0.652	0.716	0.628	0.674	0.733	0.846	0.691	11.82
20)	acetone												
		0.102		0.076	0.090		0.085	0.124			0.096	19.30	
21)	allyl chloride												
		0.218	0.231	0.321	0.230	0.238	0.240	0.223	0.243	0.251	0.244	12.51	
22)	acetonitrile												
		0.029		0.028	0.029		0.028	0.029			0.029	1.97	
23)	iodomethane												

6.9.1  
6

**Initial Calibration Summary**

Job Number: JC7097

Sample: V3C5689-ICC5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124571.D

24)	iso-butyl alcohol	0.731 0.733 0.950 0.779 0.791 0.841 0.768 0.816 0.812 0.794 0.801 7.81 0.017 0.019 0.012 0.013 0.013 0.012 0.014 18.59
25)	carbon disulfide	1.466 1.501 2.109 1.531 1.567 1.773 1.510 1.625 1.676 1.895 1.665 12.36
26)	methylene chloride	0.465 0.498 0.451 0.452 0.677 0.434 0.479 0.573 0.504 16.33
27)	methyl acetate	0.122 0.198 0.159 0.172 0.169 0.157 0.163 15.22
28)	methyl tert butyl ether	1.316 1.339 1.874 1.417 1.421 1.509 1.392 1.462 1.485 2.085 1.530 16.29
29)	trans-1,2-dichloroethene	0.603 0.600 0.781 0.623 0.643 0.681 0.614 0.654 0.671 0.628 0.650 8.23
30)	di-isopropyl ether	1.433 1.464 1.772 1.489 1.528 1.537 1.467 1.518 1.494 1.920 1.562 10.04
31)	ethyl tert-butyl ether	1.442 1.438 1.723 1.506 1.553 1.547 1.532 1.515 1.498 1.625 1.538 5.52
32)	2-butanone	0.031 0.028 0.033 0.037 0.036 0.036 0.034 9.91
33)	1,1-dichloroethane	0.734 0.756 0.987 0.759 0.799 0.807 0.763 0.797 0.829 0.898 0.813 9.44
34)	chloroprene	0.620 0.601 0.726 0.592 0.638 0.707 0.597 0.629 0.669 0.726 0.650 8.11
35)	acrylonitrile	0.107 0.110 0.103 0.109 0.097 0.105 0.109 0.105 0.106 3.97
36)	vinyl acetate	0.053 0.065 0.070 0.068 0.064 0.064 10.02
37)	ethyl acetate	0.044 0.036 0.040 0.044 0.042 0.048 0.042 9.34
38)	2,2-dichloropropane	0.803 0.823 1.057 0.840 0.865 0.992 0.841 0.873 0.945 1.140 0.918 12.24
39)	cis-1,2-dichloroethene	0.469 0.498 0.783 0.470 0.490 0.586 0.471 0.499 0.548 0.624 0.544 18.27
40)	propionitrile	0.039 0.041 0.040 0.043 0.041 0.043 0.040 0.041 3.84
41)	Methyl Acrylate *This compound does not meet Initial Calibration criteria	0.031 0.040 0.043 0.041 0.042 0.039 11.66
42)	bromochloromethane	0.193 0.210 0.237 0.206 0.215 0.238 0.205 0.216 0.213 0.215 6.76
43)	tetrahydrofuran	0.037 0.049 0.042 0.044 0.043 0.042 0.043 9.01
44)	chloroform	0.689 0.682 0.924 0.701 0.744 0.796 0.706 0.725 0.746 0.746 10.11
45)	tert-Butyl Formate	0.330 0.342 0.349 0.349 0.363 0.319 0.356 0.355 0.328 0.343 4.24
46)	dibromofluoromethane (s)	0.353 0.353 0.352 0.359 0.357 0.355 0.362 0.359 0.356 0.359 0.356 0.96
47)	1,2-dichloroethane-d4 (s)	0.351 0.346 0.337 0.334 0.393 0.341 0.333 0.355 0.350 0.348 0.349 4.90
48)	freon 113	0.406 0.418 0.487 0.413 0.407 0.477 0.400 0.427 0.414 0.428 7.48
49)	methacrylonitrile	0.106 0.108 0.111 0.117 0.113 0.122 0.102 0.111 5.84
50)	1,1,1-trichloroethane	0.753 0.797 0.989 0.789 0.826 0.833 0.807 0.830 0.849 0.879 0.835 7.67
51)	Cyclohexane	0.821 0.842 1.236 0.866 0.893 1.077 1.010 0.920 0.960 1.082 0.971 13.49
52)	Tert Amyl Alcohol	0.000 -1.00
53)	2,2,4-trimethylpentane	

6.9.1  
6

**Initial Calibration Summary**

Job Number: JC7097

Sample: V3C5689-ICC5689

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3C124571.D

Project: Sunoco - Marcus Hook Facility, PA

	1.694	1.664	1.974	1.845	1.945	1.875	2.008	1.819	1.773	2.016	1.861	6.75
54)	tert-amyl methyl ether										1.482	11.59
	1.397	1.338	1.891	1.394	1.408	1.599	1.399	1.404	1.506			
55)	I 1,4-difluorobenzene	-----	ISTD-----									
56)	epichlorohydrin	0.026	0.025	0.023	0.024	0.030	0.024	0.026	0.030	0.026	0.026	9.82
57)	n-butyl alcohol	0.008	0.009	0.009	0.010	0.007	0.010	0.009	0.009	0.009	0.009	12.89
58)	carbon tetrachloride	0.549	0.573	0.727	0.574	0.596	0.627	0.591	0.602	0.615	0.639	8.09
59)	1,1-dichloropropene	0.451	0.442	0.630	0.443	0.479	0.522	0.455	0.474	0.540	0.567	0.500
60)	hexane	0.458	0.482	0.686	0.437	0.469	0.542	0.444	0.469	0.495	0.498	15.48
61)	benzene	1.372	1.362	1.910	1.361	1.454	1.530	1.379	1.436	1.518	1.827	1.515
62)	heptane	0.269	0.271	0.361	0.252	0.270	0.358	0.255	0.268	0.270	0.286	14.76
63)	isopropyl acetate	0.054	0.062	0.057	0.062	0.060	0.061	0.059	0.061	0.059	0.059	5.62
64)	1,2-dichloroethane	0.379	0.375	0.481	0.382	0.404	0.418	0.386	0.405	0.395	0.472	0.410
65)	trichloroethene	0.329	0.321	0.419	0.334	0.361	0.402	0.341	0.351	0.370	0.450	0.368
66)	ethyl acrylate										0.000	-1.00
67)	Tert-Amyl ethyl ether										0.000	-1.00
68)	2-nitropropane *This compound does not meet Initial Calibration criteria	0.141	0.086	0.089	0.087	0.093	0.087	0.093	0.093	0.099	0.099	23.64
		-----	Linear regression	-----	Coefficient =	0.9995						
69)	2-chloroethyl vinyl ether	0.149	0.147	0.147	0.154	0.147	0.148	0.156	0.144	0.149	0.149	2.73
70)	methyl methacrylate	0.057	0.055	0.068	0.072	0.072	0.069	0.053	0.064	0.064	0.064	13.25
71)	1,2-dichloropropane	0.325	0.340	0.408	0.343	0.368	0.372	0.349	0.355	0.371	0.414	0.365
72)	methylcyclohexane	0.752	0.736	0.937	0.746	0.777	0.805	0.767	0.782	0.770	0.857	0.793
73)	dibromomethane	0.163	0.166	0.252	0.171	0.180	0.191	0.174	0.179	0.192	0.186	0.186
74)	bromodichloromethane	0.396	0.396	0.539	0.420	0.454	0.450	0.434	0.434	0.436	0.487	0.445
75)	cis-1,3-dichloropropene	0.489	0.493	0.635	0.516	0.547	0.539	0.523	0.544	0.526	0.656	0.547
76)	toluene-d8 (s)	1.208	1.192	1.202	1.212	1.228	1.198	1.246	1.213	1.199	1.180	1.208
77)	4-methyl-2-pentanone	0.095	0.105	0.103	0.112	0.097	0.109	0.109	0.109	0.109	0.105	5.93
78)	toluene	1.433	1.460	1.432	1.532	1.968	1.450	1.511	1.765	1.569	1.569	12.42
79)	3-methyl-1-butanol	0.009	0.009	0.010	0.011	0.008	0.011	0.010	0.009	0.010	0.010	8.69
80)	trans-1,3-dichloropropene	0.424	0.446	0.624	0.453	0.467	0.500	0.449	0.468	0.483	0.658	0.497
81)	ethyl methacrylate	0.329	0.356	0.526	0.358	0.373	0.387	0.369	0.369	0.412	0.396	0.388

6.9.1  
6

**Initial Calibration Summary**

Job Number: JC7097

Sample: V3C5689-ICC5689

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3C124571.D

Project: Sunoco - Marcus Hook Facility, PA

82)	1,1,2-trichloroethane	0.235 0.247 0.390 0.240 0.250 0.264 0.242 0.256 0.280	0.267	17.99
83)	2-hexanone	0.068 0.064 0.082 0.090 0.091 0.080 0.062	0.077	15.81
84)	I chlorobenzene-d5	-----ISTD-----		
85)	tetrachloroethene	0.404 0.405 0.549 0.436 0.465 0.500 0.443 0.451 0.486 0.559 0.470	11.46	
86)	1,3-dichloropropane	0.471 0.533 0.704 0.523 0.535 0.494 0.503 0.535 0.542 0.684 0.552	14.12	
87)	butyl acetate	0.199 0.185 0.193 0.204 0.196 0.201	0.196	3.50
88)	dibromochloromethane	0.303 0.329 0.522 0.346 0.378 0.351 0.366 0.347 0.339	0.365	17.19
89)	1,2-dibromoethane	0.260 0.284 0.389 0.287 0.296 0.285 0.282 0.301 0.295	0.297	12.18
90)	3,3-Dimethyl-1-Butanol	0.040 0.043 0.043 0.047 0.047 0.045 0.043	0.044	5.40
91)	chlorobenzene	1.022 1.081 1.639 1.094 1.144 1.217 1.091 1.137 1.203 1.416 1.204	15.55	
92)	1,1,1,2-tetrachloroethane	0.413 0.426 0.696 0.480 0.520 0.451 0.505 0.469 0.487 0.521 0.497	15.89	
93)	ethylbenzene	1.822 1.937 2.949 1.977 2.103 2.238 1.986 2.046 2.132 2.913 2.210	17.94	
94)	m,p-xylene	0.703 0.736 1.184 0.763 0.812 0.901 0.774 0.784 0.800	0.828	17.39
95)	o-xylene	1.559 1.598 2.712 1.697 1.823 1.926 1.742 1.755 1.780	1.844	18.66
96)	styrene	1.093 1.147 1.834 1.217 1.275 1.338 1.226 1.241 1.341	1.301	16.55
97)	butyl acrylate		0.000	-1.00
98)	n-butyl ether	1.806 1.946 2.983 2.002 2.133 2.169 1.993 2.045 2.093	2.130	15.85
99)	bromoform	0.196 0.214 0.322 0.223 0.236 0.208 0.242 0.223 0.240	0.234	15.64
100)	I 1,4-dichlorobenzene-d	-----ISTD-----		
101)	isopropylbenzene	3.827 3.845 5.375 4.191 4.560 4.251 4.114 4.239 4.141 4.929 4.347	11.13	
102)	4-bromofluorobenzene (s)	1.001 0.972 0.974 0.989 0.988 0.994 0.960 0.982 0.983 0.990 0.983	1.24	
103)	bromobenzene	0.868 0.890 0.896 0.953 1.001 0.885 0.925 0.988	0.926	5.37
104)	cis-1,4-dichloro-2-butene		0.000	-1.00
105)	cyclohexanone	0.053 0.067 0.051 0.062 0.047 0.056	0.056	13.13
106)	1,1,2,2-tetrachloroethane	0.787 0.837 0.800 0.863 1.018 0.777 0.879 0.955	0.865	9.84
107)	trans-1,4-dichloro-2-butene	0.231 0.262 0.197 0.196 0.185 0.221 0.268	0.223	14.75
108)	1,2,3-trichloropropane	0.212 0.230 0.208 0.216 0.244 0.201 0.224 0.261	0.225	8.91
109)	n-propylbenzene	4.177 4.311 6.184 4.397 4.717 4.892 4.245 4.604 4.650	4.686	13.01
110)	4-Ethyltoluene		0.000	-1.00
111)	2-chlorotoluene	0.883 0.934 1.414 0.967 1.032 0.973 0.962 0.979 1.017 1.076 1.024	14.36	

6.9.1  
6

**Initial Calibration Summary**

Job Number: JC7097

Sample: V3C5689-ICC5689

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3C124571.D

Project: Sunoco - Marcus Hook Facility, PA

112)	4-chlorotoluene	0.891 0.874 1.468 0.901 0.957 1.021 0.886 0.945 0.993 1.155 1.009 18.05
113)	1,3,5-trimethylbenzene	3.215 3.270 4.641 3.555 3.903 3.772 3.579 3.601 3.486 4.510 3.753 12.78
114)	tert-butylbenzene	2.763 2.657 3.594 3.047 3.308 2.977 3.054 3.057 2.964 3.047 9.07
115)	pentachloroethane	0.581 0.597 0.772 0.671 0.752 0.693 0.703 0.655 0.626 0.672 9.73
116)	1,2,4-trimethylbenzene	3.210 3.174 5.082 3.425 3.735 3.825 3.438 3.506 3.573 3.663 15.65
117)	sec-butylbenzene	4.418 4.299 6.207 4.819 5.203 5.159 4.732 4.893 4.787 5.255 4.977 10.74
118)	1,3-dichlorobenzene	1.746 1.875 2.859 1.826 1.910 2.212 1.806 1.906 2.156 2.033 17.06
119)	p-isopropyltoluene	3.676 3.661 4.857 3.971 4.297 4.251 3.924 4.097 4.080 4.661 4.147 9.33
120)	1,4-dichlorobenzene	1.815 1.943 1.817 1.906 2.279 1.812 1.927 2.147 1.956 8.74
121)	1,2-dichlorobenzene	1.765 1.870 2.945 1.853 1.943 2.219 1.832 1.905 2.073 2.045 17.82
122)	1,4-Diethylbenzene	0.000 -1.00
123)	n-butylbenzene	1.879 1.978 1.989 2.097 1.934 2.106 2.192 2.025 5.45
124)	1,2,4,5-Tetramethylbenzene	0.000 -1.00
125)	1,2-dibromo-3-chloropropane	0.191 0.211 0.202 0.208 0.243 0.187 0.212 0.238 0.212 9.47
126)	1,3,5-Trichlorobenzene	1.740 1.817 2.786 1.896 1.993 2.230 1.750 1.970 2.065 2.027 16.03
127)	1,2,4-trichlorobenzene	1.667 1.689 2.301 1.857 1.889 1.934 1.499 1.881 1.870 1.843 12.06
128)	hexachlorobutadiene	0.938 0.925 1.163 0.993 1.042 1.135 0.894 1.039 1.102 1.026 9.34
129)	naphthalene	3.548 3.683 3.876 3.783 4.491 2.737 3.969 4.080 3.771 13.42
130)	1,2,3-trichlorobenzene	1.678 1.743 2.495 1.839 1.789 1.960 1.255 1.869 1.905 1.837 17.51
131)	hexachloroethane	0.628 0.618 0.711 0.802 0.797 0.764 0.691 0.695 0.713 9.89
132)	Benzyl chloride	1.510 1.591 2.390 1.513 1.599 1.743 1.540 1.557 1.606 1.672 16.62

-----  
(#) = Out of Range   ### Number of calibration levels exceeded format   ###

M3C5689.M

Mon Nov 02 07:04:01 2015

MS3C

6.9.1  
6

**Initial Calibration Verification**

Job Number: JC7097

Sample: V3C5689-ICV5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124576.D

**Evaluate Continuing Calibration Report**

Data File : C:\MSDCHEM\1\DATA\3C124576.D Vial: 14  
 Acq On : 30 Oct 2015 7:30 am Operator: PrashanS  
 Sample : icv5689-50 Inst : MS3C  
 Misc : MS93294,V3C5689,5.0,,,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\M3C5689.M (RTE Integrator)  
 Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 Last Update : Fri Oct 30 14:20:00 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	102	0.01	7.09
2	1,4-dioxane	0.116	0.116	0.0	102	0.00	10.97
3	tertiary butyl alcohol	1.402	1.257	10.3	100	0.00	7.21
4	ethanol			-----NA-----			
5	I pentafluorobenzene	1.000	1.000	0.0	99	0.00	9.33
6	propene			-----NA-----			
7	chlorodifluoromethane	0.935	0.677	27.6	72	0.00	3.79
8	dichlorodifluoromethane	1.201	1.058	11.9	95	-0.01	3.77
9	chloromethane	0.749	0.675	9.9	99	0.00	4.10
10	vinyl chloride	0.798	0.755	5.4	100	0.00	4.35
11	bromomethane	0.517	0.477	7.7	101	0.00	4.98
12	chloroethane	0.420	0.377	10.2	100	0.00	5.14
13	1,3-butadiene			-----NA-----			
14	Vinyl Bromide			-----NA-----			
15	Pentane			-----NA-----			
16	trichlorofluoromethane	0.915	0.801	12.5	101	0.00	5.59
17	ethyl ether	0.221	0.213	3.6	102	0.00	6.01
18	acrolein	0.068	0.062	8.8	99	0.01	6.24
19	1,1-dichloroethene	0.691	0.651	5.8	101	0.00	6.41
20	acetone	0.096	0.082	14.6	106	0.00	6.46
21	allyl chloride	0.244	0.229	6.1	98	0.00	6.94
22	acetonitrile	0.029	0.029	0.0	103	0.01	6.88
23	iodomethane	0.801	0.786	1.9	99	0.00	6.69
24	iso-butyl alcohol	0.014	0.012	14.3	100	-0.01	9.61
25	carbon disulfide	1.665	1.552	6.8	100	0.00	6.82
26	methylene chloride	0.504	0.451	10.5	98	0.00	7.12
27	methyl acetate	0.163	0.170	-4.3	106	0.00	6.93
28	methyl tert butyl ether	1.530	1.403	8.3	98	0.00	7.46
29	trans-1,2-dichloroethene	0.650	0.635	2.3	100	0.00	7.50
30	di-isopropyl ether	1.562	1.515	3.0	100	0.00	8.06
31	ethyl tert-butyl ether	1.538	1.516	1.4	99	0.00	8.53
32	2-butanone	0.034	0.034	0.0	101	0.00	8.79
33	1,1-dichloroethane	0.813	0.756	7.0	98	0.00	8.07
34	chloroprene	0.650	0.724	-11.4	121	0.00	8.18
35	acrylonitrile	0.106	0.106	0.0	102	0.00	7.44
36	vinyl acetate	0.064	0.067	-4.7	102	0.00	8.06
37	ethyl acetate	0.042	0.042	0.0	103	0.00	8.80
38	2,2-dichloropropane	0.918	0.848	7.6	99	0.00	8.81
39	cis-1,2-dichloroethene	0.544	0.469	13.8	98	0.00	8.80
40	propionitrile	0.041	0.041	0.0	101	0.00	8.86
41	Methyl Acrylate	0.039	0.042	-7.7	103	0.00	8.88

**Initial Calibration Verification**

Job Number: JC7097

Sample: V3C5689-ICV5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124576.D

42	bromochloromethane	0.215	0.206	4.2	98	0.00	9.11	
43	tetrahydrofuran	0.043	0.040	7.0	94	0.00	9.17	
44	chloroform	0.746	0.710	4.8	100	0.00	9.17	
45	tert-Butyl Formate	0.343	0.431	-25.7	122	0.00	9.21	
46 S	dibromofluoromethane (s)	0.356	0.361	-1.4	99	0.00	9.37	
47 S	1,2-dichloroethane-d4 (s)	0.349	0.339	2.9	100	0.00	9.79	
48	freon 113	0.428	0.422	1.4	101	0.01	6.39	
49	methacrylonitrile	0.111	0.110	0.9	98	0.00	9.05	
50	1,1,1-trichloroethane	0.835	0.806	3.5	101	0.00	9.43	
51	Cyclohexane	0.971	0.873	10.1	99	0.00	9.51	
52	Tert Amyl Alcohol			-----NA-----				
53	2,2,4-trimethylpentane	1.861	1.691	9.1	90	0.00	9.88	
54	tert-amyl methyl ether	1.482	1.389	6.3	98	0.00	9.91	
55 I	1,4-difluorobenzene	1.000	1.000	0.0	98	0.00	10.25	
56	epichlorohydrin	0.026	0.024	7.7	102	0.00	11.51	
57	n-butyl alcohol	0.009	0.009	0.0	102	0.00	10.38	
58	carbon tetrachloride	0.609	0.586	3.8	100	0.00	9.64	
59	1,1-dichloropropene	0.500	0.458	8.4	102	0.00	9.61	
60	hexane	0.498	0.378	24.1	85	0.00	7.82	
61	benzene	1.515	1.397	7.8	101	0.00	9.87	
62	heptane	0.286	0.230	19.6	90	0.00	10.06	
63	isopropyl acetate	0.059	0.058	1.7	100	0.00	9.80	
64	1,2-dichloroethane	0.410	0.384	6.3	99	0.00	9.88	
65	trichloroethene	0.368	0.338	8.2	100	0.00	10.59	
66	ethyl acrylate			-----NA-----				
67	Tert-Amyl ethyl ether			-----NA-----				
68	2-nitropropane	50.000	48.588	True	Calc.	% Drift		
				AvgRF	CCRF	% Dev		
69	2-chloroethyl vinyl ether	0.149	0.157	-5.4	105	0.00	11.39	
70	methyl methacrylate	0.064	0.066	-3.1	95	0.00	10.87	
71	1,2-dichloropropane	0.365	0.348	4.7	100	0.00	10.85	
72	methylcyclohexane	0.793	0.704	11.2	93	0.00	10.82	
73	dibromomethane	0.186	0.174	6.5	100	0.00	11.02	
74	bromodichloromethane	0.445	0.425	4.5	100	0.00	11.15	
75	cis-1,3-dichloropropene	0.547	0.517	5.5	99	0.00	11.61	
76 S	toluene-d8 (s)	1.208	1.225	-1.4	99	0.00	11.90	
77	4-methyl-2-pentanone	0.105	0.106	-1.0	102	0.00	11.70	
78	toluene	1.569	1.470	6.3	101	0.00	11.97	
79	3-methyl-1-butanol	0.010	0.010	0.0	100	0.00	11.73	
80	trans-1,3-dichloropropene	0.497	0.452	9.1	98	0.00	12.17	
81	ethyl methacrylate	0.388	0.353	9.0	97	0.00	12.17	
82	1,1,2-trichloroethane	0.267	0.245	8.2	100	0.00	12.38	
83	2-hexanone	0.077	0.082	-6.5	98	0.00	12.56	
84 I	chlorobenzene-d5	1.000	1.000	0.0	100	0.00	13.41	
85	tetrachloroethene	0.470	0.435	7.4	100	0.00	12.56	
86	1,3-dichloropropane	0.552	0.508	8.0	97	0.00	12.56	
87	butyl acetate	0.196	0.198	-1.0	103	0.00	12.63	
88	dibromochloromethane	0.365	0.351	3.8	102	0.00	12.83	
89	1,2-dibromoethane	0.297	0.287	3.4	100	0.00	12.97	
90	3,3-Dimethyl-1-Butanol	0.044	0.044	0.0	102	0.00	12.73	
91	chlorobenzene	1.204	1.092	9.3	100	0.00	13.44	
92	1,1,1,2-tetrachloroethane	0.497	0.478	3.8	100	0.00	13.50	
93	ethylbenzene	2.210	1.994	9.8	101	0.00	13.49	
94	m,p-xylene	0.828	0.765	7.6	101	0.00	13.60	
95	o-xylene	1.844	1.729	6.2	102	0.00	14.01	

**Initial Calibration Verification**

Job Number: JC7097

Sample: V3C5689-ICV5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124576.D

96	styrene	1.301	1.213	6.8	100	0.00	14.02
97	butyl acrylate			-----NA-----			
98	n-butyl ether	2.130	1.987	6.7	99	0.00	13.36
99	bromoform	0.234	0.222	5.1	99	0.00	14.28
100 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	98	0.00	15.70
101	isopropylbenzene	4.347	4.316	0.7	101	0.00	14.35
102 S	4-bromofluorobenzene (s)	0.983	1.009	-2.6	100	0.00	14.55
103	bromobenzene	0.926	0.919	0.8	101	0.00	14.74
104	cis-1,4-dichloro-2-butene			-----NA-----			
105	cyclohexanone	0.056	0.052	7.1	100	0.00	14.51
106	1,1,2,2-tetrachloroethane	0.865	0.818	5.4	101	0.00	14.65
107	trans-1,4-dichloro-2-bute	0.223	0.194	13.0	97	0.00	14.69
108	1,2,3-trichloropropane	0.225	0.210	6.7	99	0.00	14.72
109	n-propylbenzene	4.686	4.521	3.5	101	0.00	14.76
110	4-Ethyltoluene			-----NA-----			
111	2-chlorotoluene	1.024	0.975	4.8	99	0.00	14.90
112	4-chlorotoluene	1.009	0.921	8.7	101	0.00	15.00
113	1,3,5-trimethylbenzene	3.753	3.642	3.0	101	0.00	14.91
114	tert-butylbenzene	3.047	3.106	-1.9	100	0.00	15.25
115	pentachloroethane	0.672	0.693	-3.1	102	0.00	15.33
116	1,2,4-trimethylbenzene	3.663	3.504	4.3	101	0.00	15.29
117	sec-butylbenzene	4.977	4.935	0.8	101	0.00	15.46
118	1,3-dichlorobenzene	2.033	1.832	9.9	99	0.00	15.65
119	p-isopropyltoluene	4.147	4.036	2.7	100	0.00	15.58
120	1,4-dichlorobenzene	1.956	1.802	7.9	98	0.00	15.73
121	1,2-dichlorobenzene	2.045	1.837	10.2	98	0.00	16.12
122	1,4-Diethylbenzene			-----NA-----			
123	n-butylbenzene	2.025	1.991	1.7	99	0.00	16.00
124	1,2,4,5-Tetramethylbenzen			-----NA-----			
125	1,2-dibromo-3-chloropropa	0.212	0.200	5.7	98	0.00	16.88
126	1,3,5-Trichlorobenzene	2.027	1.868	7.8	97	0.00	17.07
127	1,2,4-trichlorobenzene	1.843	1.809	1.8	96	0.00	17.70
128	hexachlorobutadiene	1.026	0.996	2.9	99	0.00	17.82
129	naphthalene	3.771	3.878	-2.8	99	0.00	17.97
130	1,2,3-trichlorobenzene	1.837	1.838	-0.1	98	0.00	18.21
131	hexachloroethane	0.713	0.715	-0.3	99	0.00	16.38
132	Benzyl chloride	1.672	1.388	17.0	90	0.00	15.84

(#= Out of Range  
3C124571.D M3C5689.MSPCC's out = 0 CCC's out = 0  
Fri Oct 30 14:22:11 2015 MS3C6.9.2  
6

# Continuing Calibration Summary

Job Number: JC7097

Sample: V3C5694-CC5689

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3C124671.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\3C\v3c5693-5694\3C124671.D Vial: 28  
 Acq On : 2 Nov 2015 1:06 am Operator: PrashanS  
 Sample : CC5689-50 Inst : MS3C  
 Misc : MS93726,V3C5694,5.0,,,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\M3C5689.M (RTE Integrator)  
 Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 Last Update : Mon Sep 13 11:48:20 2010  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	89	0.00	7.08
2	1,4-dioxane	0.116	0.122	-5.2	95	0.00	10.97
3	tertiary butyl alcohol	1.402	1.316	6.1	92	-0.02	7.19
4	ethanol			-----NA-----			
5	I pentafluorobenzene	1.000	1.000	0.0	100	0.00	9.33
6	propene			-----NA-----			
7	chlorodifluoromethane	0.935	0.916	2.0	98	0.00	3.78
8	dichlorodifluoromethane	1.201	1.019	15.2	93	-0.02	3.77
9	chloromethane	0.749	0.611	18.4	91	0.00	4.09
10	vinyl chloride	0.798	0.691	13.4	93	0.00	4.34
11	bromomethane	0.517	0.458	11.4	98	0.00	4.97
12	chloroethane	0.420	0.353	16.0	95	0.00	5.14
13	1,3-butadiene			-----NA-----			
14	Vinyl Bromide			-----NA-----			
15	Pentane			-----NA-----			
16	trichlorofluoromethane	0.915	0.793	13.3	101	-0.01	5.58
17	ethyl ether	0.221	0.212	4.1	103	-0.02	5.99
18	acrolein	0.068	0.057	16.2	92	0.00	6.23
19	1,1-dichloroethene	0.691	0.633	8.4	100	0.00	6.41
20	acetone	0.096	0.084	12.5	110	-0.01	6.46
21	allyl chloride	0.244	0.220	9.8	95	0.00	6.93
22	acetonitrile	0.029	0.027	6.9	96	0.00	6.87
23	iodomethane	0.801	0.780	2.6	100	0.00	6.68
24	iso-butyl alcohol	0.014	0.011	21.4#	91	-0.01	9.61
25	carbon disulfide	1.665	1.463	12.1	95	0.00	6.81
26	methylene chloride	0.504	0.442	12.3	98	0.00	7.11
27	methyl acetate	0.163	0.169	-3.7	107	0.00	6.92
28	methyl tert butyl ether	1.530	1.402	8.4	99	0.00	7.45
29	trans-1,2-dichloroethene	0.650	0.607	6.6	97	0.00	7.50
30	di-isopropyl ether	1.562	1.427	8.6	96	0.00	8.05
31	ethyl tert-butyl ether	1.538	1.460	5.1	97	0.00	8.52
32	2-butanone	0.034	0.034	0.0	102	0.00	8.79
33	1,1-dichloroethane	0.813	0.749	7.9	98	0.00	8.06
34	chloroprene	0.650	0.578	11.1	97	0.00	8.18
35	acrylonitrile	0.106	0.095	10.4	92	0.00	7.43
36	vinyl acetate	0.064	0.065	-1.6	99	0.00	8.06
37	ethyl acetate	0.042	0.040	4.8	99	0.00	8.80
38	2,2-dichloropropane	0.918	0.866	5.7	103	0.00	8.80
39	cis-1,2-dichloroethene	0.544	0.470	13.6	100	0.00	8.80
40	propionitrile	0.041	0.037	9.8	93	0.00	8.85
41	Methyl Acrylate	0.039	0.040	-2.6	100	0.00	8.88

## Continuing Calibration Summary

Job Number: JC7097

Sample: V3C5694-CC5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124671.D

42	bromochloromethane	0.215	0.208	3.3	101	0.00	9.11
43	tetrahydrofuran	0.043	0.040	7.0	96	0.00	9.17
44	chloroform	0.746	0.719	3.6	102	0.00	9.17
45	tert-Butyl Formate	0.343	0.335	2.3	96	0.00	9.20
46 S	dibromofluoromethane (s)	0.356	0.350	1.7	97	0.00	9.37
47 S	1,2-dichloroethane-d4 (s)	0.349	0.325	6.9	97	0.00	9.79
48	freon 113	0.428	0.430	-0.5	104	0.00	6.38
49	methacrylonitrile	0.111	0.108	2.7	98	0.00	9.04
50	1,1,1-trichloroethane	0.835	0.803	3.8	102	0.00	9.43
51	Cyclohexane	0.971	0.839	13.6	97	0.00	9.51
52	Tert Amyl Alcohol			-----NA-----			
53	2,2,4-trimethylpentane	1.861	1.770	4.9	96	0.00	9.88
54	tert-amyl methyl ether	1.482	1.347	9.1	96	0.00	9.91
55 I	1,4-difluorobenzene	1.000	1.000	0.0	96	0.00	10.24
56	epichlorohydrin	0.026	0.024	7.7	99	0.00	11.51
57	n-butyl alcohol	0.009	0.008	11.1	88	0.00	10.37
58	carbon tetrachloride	0.609	0.607	0.3	102	0.00	9.64
59	1,1-dichloropropene	0.500	0.468	6.4	102	0.00	9.61
60	hexane	0.498	0.467	6.2	103	0.00	7.82
61	benzene	1.515	1.407	7.1	100	0.00	9.87
62	heptane	0.286	0.273	4.5	104	0.00	10.05
63	isopropyl acetate	0.059	0.059	0.0	99	0.00	9.79
64	1,2-dichloroethane	0.410	0.413	-0.7	104	0.00	9.88
65	trichloroethene	0.368	0.353	4.1	102	0.00	10.59
66	ethyl acrylate			-----NA-----			
67	Tert-Amyl ethyl ether			-----NA-----			
68	2-nitropropane	50.000	53.517	True	Calc.	% Drift	
				-7.0	108	0.00	11.36
69	2-chloroethyl vinyl ether	0.149	0.160	AvgRF	CCRF	% Dev	
70	methyl methacrylate	0.064	0.065		-7.4	105	0.00
71	1,2-dichloropropane	0.365	0.354		-1.6	91	0.00
72	methylcyclohexane	0.793	0.743		3.0	100	0.00
73	dibromomethane	0.186	0.183		6.3	96	0.00
74	bromodichloromethane	0.445	0.453		1.6	103	0.00
75	cis-1,3-dichloropropene	0.547	0.547		-1.8	104	0.00
76 S	toluene-d8 (s)	1.208	1.239		0.0	102	0.00
77	4-methyl-2-pentanone	0.105	0.099		1.6	102	0.00
78	toluene	1.569	1.533		-2.6	98	0.00
79	3-methyl-1-butanol	0.010	0.009		5.7	93	0.00
80	trans-1,3-dichloropropene	0.497	0.478		-1.6	103	0.00
81	ethyl methacrylate	0.388	0.352		3.0	103	0.00
82	1,1,2-trichloroethane	0.267	0.258		6.3	91	0.00
83	2-hexanone	0.077	0.082		0.0	104	0.00
84 I	chlorobenzene-d5	1.000	1.000		9.3	95	0.00
85	tetrachloroethene	0.470	0.456		-2.0	106	0.00
86	1,3-dichloropropane	0.552	0.526		15.9	88	0.00
87	butyl acetate	0.196	0.189		4.7	101	0.00
88	dibromochloromethane	0.365	0.372		3.6	99	0.00
89	1,2-dibromoethane	0.297	0.303		-1.9	108	0.00
90	3,3-Dimethyl-1-Butanol	0.044	0.037		-2.0	106	0.00
91	chlorobenzene	1.204	1.145		15.9	88	0.00
92	1,1,1,2-tetrachloroethane	0.497	0.496		4.9	105	0.00
93	ethylbenzene	2.210	2.044		0.2	104	0.00
94	m,p-xylene	0.828	0.786		7.5	104	0.00
95	o-xylene	1.844	1.741		5.1	104	0.00
					5.6	103	0.00
							14.01

**Continuing Calibration Summary**

Job Number: JC7097

Sample: V3C5694-CC5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124671.D

96	styrene	1.301	1.243	4.5	103	0.00	14.02
97	butyl acrylate			-----NA-----			
98	n-butyl ether	2.130	1.955	8.2	98	0.00	13.36
99	bromoform	0.234	0.246	-5.1	111	0.00	14.28
100 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	102	0.00	15.70
101	isopropylbenzene	4.347	4.192	3.6	102	0.00	14.35
102 S	4-bromofluorobenzene (s)	0.983	0.983	0.0	101	0.00	14.55
103	bromobenzene	0.926	0.958	-3.5	109	0.00	14.74
104	cis-1,4-dichloro-2-butene			-----NA-----			
105	cyclohexanone	0.056	0.034	39.3#	67	0.00	14.51
106	1,1,2,2-tetrachloroethane	0.865	0.811	6.2	104	0.00	14.65
107	trans-1,4-dichloro-2-bute	0.223	0.194	13.0	101	0.00	14.69
108	1,2,3-trichloropropane	0.225	0.215	4.4	105	0.00	14.72
109	n-propylbenzene	4.686	4.492	4.1	104	0.00	14.76
110	4-Ethyltoluene			-----NA-----			
111	2-chlorotoluene	1.024	0.977	4.6	103	0.00	14.90
112	4-chlorotoluene	1.009	0.927	8.1	105	0.00	15.00
113	1,3,5-trimethylbenzene	3.753	3.598	4.1	103	0.00	14.91
114	tert-butylbenzene	3.047	3.046	0.0	102	0.00	15.25
115	pentachloroethane	0.672	0.703	-4.6	107	0.00	15.33
116	1,2,4-trimethylbenzene	3.663	3.496	4.6	104	0.00	15.30
117	sec-butylbenzene	4.977	4.799	3.6	102	0.00	15.46
118	1,3-dichlorobenzene	2.033	1.895	6.8	106	0.00	15.65
119	p-isopropyltoluene	4.147	3.965	4.4	102	0.00	15.58
120	1,4-dichlorobenzene	1.956	1.869	4.4	105	0.00	15.73
121	1,2-dichlorobenzene	2.045	1.924	5.9	106	0.00	16.12
122	1,4-Diethylbenzene			-----NA-----			
123	n-butylbenzene	2.025	1.935	4.4	99	0.00	15.99
124	1,2,4,5-Tetramethylbenzen			-----NA-----			
125	1,2-dibromo-3-chloropropa	0.212	0.211	0.5	107	0.00	16.88
126	1,3,5-Trichlorobenzene	2.027	1.918	5.4	103	0.00	17.07
127	1,2,4-trichlorobenzene	1.843	1.843	0.0	101	0.00	17.70
128	hexachlorobutadiene	1.026	1.039	-1.3	107	0.00	17.82
129	naphthalene	3.771	3.889	-3.1	102	0.00	17.97
130	1,2,3-trichlorobenzene	1.837	1.868	-1.7	104	0.00	18.21
131	hexachloroethane	0.713	0.735	-3.1	106	0.00	16.38
132	Benzyl chloride	1.672	1.450	13.3	98	0.00	15.84

(#= Out of Range  
3C124571.D M3C5689.MSPCC's out = 0 CCC's out = 0  
Mon Nov 02 14:10:33 2015 T

# Continuing Calibration Summary

Job Number: JC7097

Sample: V3C5698-CC5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124745.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\3C\v3c5698-5699\3C124745.D Vial: 2  
 Acq On : 3 Nov 2015 12:24 pm Operator: PrashanS  
 Sample : CC5689-20 Inst : MS3C  
 Misc : MS93726,V3C5698,5.0,,,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\M3C5689.M (RTE Integrator)  
 Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 Last Update : Mon Sep 13 11:48:20 2010  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	101	0.00	7.08
2	1,4-dioxane	0.116	0.118	-1.7	98	0.00	10.97
3	tertiary butyl alcohol	1.402	1.363	2.8	94	0.00	7.20
4	ethanol			-----NA-----			
5	I pentafluorobenzene	1.000	1.000	0.0	98	0.00	9.33
6	propene			-----NA-----			
7	chlorodifluoromethane	0.935	0.945	-1.1	95	0.00	3.78
8	dichlorodifluoromethane	1.201	1.030	14.2	86	0.00	3.78
9	chloromethane	0.749	0.634	15.4	85	0.00	4.09
10	vinyl chloride	0.798	0.716	10.3	90	0.00	4.34
11	bromomethane	0.517	0.452	12.6	92	0.00	4.97
12	chloroethane	0.420	0.363	13.6	90	0.00	5.14
13	1,3-butadiene			-----NA-----			
14	Vinyl Bromide			-----NA-----			
15	Pentane			-----NA-----			
16	trichlorofluoromethane	0.915	0.785	14.2	90	0.00	5.58
17	ethyl ether	0.221	0.221	0.0	98	0.00	6.00
18	acrolein	0.068	0.063	7.4	93	0.00	6.23
19	1,1-dichloroethene	0.691	0.642	7.1	94	-0.01	6.40
20	acetone	0.096	0.079	17.7	63	0.00	6.46
21	allyl chloride	0.244	0.214	12.3	87	0.00	6.93
22	acetonitrile	0.029	0.030	-3.4	103	0.00	6.88
23	iodomethane	0.801	0.774	3.4	93	0.00	6.68
24	iso-butyl alcohol	0.014	0.014	0.0	107	0.00	9.62
25	carbon disulfide	1.665	1.520	8.7	92	0.00	6.81
26	methylene chloride	0.504	0.451	10.5	93	0.00	7.11
27	methyl acetate	0.163	0.208	-27.6#	130	0.00	6.93
28	methyl tert butyl ether	1.530	1.395	8.8	94	0.00	7.45
29	trans-1,2-dichloroethene	0.650	0.630	3.1	95	0.00	7.50
30	di-isopropyl ether	1.562	1.478	5.4	96	0.00	8.06
31	ethyl tert-butyl ether	1.538	1.467	4.6	95	0.00	8.52
32	2-butanone	0.034	0.035	-2.9	97	0.01	8.80
33	1,1-dichloroethane	0.813	0.760	6.5	94	0.00	8.06
34	chloroprene	0.650	0.589	9.4	92	0.00	8.18
35	acrylonitrile	0.106	0.107	-0.9	97	0.00	7.44
36	vinyl acetate	0.064	0.064	0.0	98	0.00	8.07
37	ethyl acetate	0.042	0.041	2.4	85	0.00	8.81
38	2,2-dichloropropane	0.918	0.848	7.6	96	0.00	8.80
39	cis-1,2-dichloroethene	0.544	0.467	14.2	92	0.00	8.80
40	propionitrile	0.041	0.041	0.0	94	0.00	8.86
41	Methyl Acrylate	0.039	0.033	15.4	77	0.01	8.89

## Continuing Calibration Summary

Job Number: JC7097

Sample: V3C5698-CC5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124745.D

42	bromochloromethane	0.215	0.212	1.4	97	0.00	9.11	
43	tetrahydrofuran	0.043	0.043	0.0	102	0.00	9.16	
44	chloroform	0.746	0.714	4.3	97	0.00	9.17	
45	tert-Butyl Formate	0.343	0.338	1.5	94	0.00	9.21	
46 S	dibromofluoromethane (s)	0.356	0.375	-5.3	103	0.00	9.36	
47 S	1,2-dichloroethane-d4 (s)	0.349	0.360	-3.2	100	0.00	9.79	
48	freon 113	0.428	0.435	-1.6	100	0.00	6.38	
49	methacrylonitrile	0.111	0.113	-1.8	91	0.00	9.05	
50	1,1,1-trichloroethane	0.835	0.798	4.4	95	0.00	9.43	
51	Cyclohexane	0.971	0.842	13.3	90	0.00	9.51	
52	Tert Amyl Alcohol			-----NA-----				
53	2,2,4-trimethylpentane	1.861	1.643	11.7	89	0.00	9.88	
54	tert-amyl methyl ether	1.482	1.353	8.7	95	0.00	9.91	
55 I	1,4-difluorobenzene	1.000	1.000	0.0	100	0.00	10.25	
56	epichlorohydrin	0.026	0.026	0.0	99	0.00	11.51	
57	n-butyl alcohol	0.009	0.009	0.0	101	0.00	10.38	
58	carbon tetrachloride	0.609	0.572	6.1	95	0.00	9.64	
59	1,1-dichloropropene	0.500	0.443	11.4	94	0.00	9.61	
60	hexane	0.498	0.433	13.1	93	0.00	7.82	
61	benzene	1.515	1.355	10.6	95	0.00	9.87	
62	heptane	0.286	0.243	15.0	91	0.00	10.05	
63	isopropyl acetate	0.059	0.059	0.0	98	0.00	9.80	
64	1,2-dichloroethane	0.410	0.393	4.1	98	0.00	9.88	
65	trichloroethene	0.368	0.331	10.1	95	0.00	10.59	
66	ethyl acrylate			-----NA-----				
67	Tert-Amyl ethyl ether			-----NA-----				
68	2-nitropropane	20.000	19.049	True	Calc.	% Drift		
				4.8	101	0.00	11.36	
69	2-chloroethyl vinyl ether	0.149	0.155	AvgRF	CCRF	% Dev		
70	methyl methacrylate	0.064	0.062		-4.0	100	0.00	
71	1,2-dichloropropane	0.365	0.332		3.1	90	0.00	
72	methylcyclohexane	0.793	0.718		9.0	94	0.00	
73	dibromomethane	0.186	0.177		9.5	92	0.00	
74	bromodichloromethane	0.445	0.419		4.8	99	0.00	
75	cis-1,3-dichloropropene	0.547	0.511		5.8	97	0.00	
76 S	toluene-d8 (s)	1.208	1.215		6.6	94	0.00	
77	4-methyl-2-pentanone	0.105	0.102		-0.6	101	0.00	
78	toluene	1.569	1.419		2.9	94	0.00	
79	3-methyl-1-butanol	0.010	0.009		9.6	94	0.00	
80	trans-1,3-dichloropropene	0.497	0.447		10.0	96	0.00	
81	ethyl methacrylate	0.388	0.319		9.1	96	0.00	
82	1,1,2-trichloroethane	0.267	0.248		10.1	96	0.00	
83	2-hexanone	0.077	0.076		7.1	97	0.00	
84 I	chlorobenzene-d5	1.000	1.000		1.3	95	0.00	
85	tetrachloroethene	0.470	0.426		11.5	95	0.00	
86	1,3-dichloropropane	0.552	0.514		8.5	98	0.00	
87	butyl acetate	0.196	0.196		9.4	96	0.00	
88	dibromochloromethane	0.365	0.342		6.9	97	0.00	
89	1,2-dibromoethane	0.297	0.286		9.0	96	0.00	
90	3,3-Dimethyl-1-Butanol	0.044	0.040		3.7	96	0.00	
91	chlorobenzene	1.204	1.066		9.1	90	0.00	
92	1,1,1,2-tetrachloroethane	0.497	0.455		12.6	93	0.00	
93	ethylbenzene	2.210	1.903		11.7	94	0.00	
94	m,p-xylene	0.828	0.731		13.9	94	0.00	
95	o-xylene	1.844	1.611		12.6	93	0.00	

6.9.4  
6

**Continuing Calibration Summary**

Job Number: JC7097

Sample: V3C5698-CC5689

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3C124745.D

96	styrene	1.301	1.112	14.5	91	0.00	14.02
97	butyl acrylate			-----NA-----			
98	n-butyl ether	2.130	1.840	13.6	91	0.00	13.36
99	bromoform	0.234	0.225	3.8	102	0.00	14.28
100 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	15.70
101	isopropylbenzene	4.347	3.981	8.4	94	0.00	14.35
102 S	4-bromofluorobenzene (s)	0.983	1.005	-2.2	102	0.00	14.55
103	bromobenzene	0.926	0.911	1.6	98	0.00	14.74
104	cis-1,4-dichloro-2-butene			-----NA-----			
105	cyclohexanone	0.056	0.048	14.3	86	0.00	14.51
106	1,1,2,2-tetrachloroethane	0.865	0.828	4.3	94	0.00	14.65
107	trans-1,4-dichloro-2-bute	0.223	0.208	6.7	94	0.00	14.69
108	1,2,3-trichloropropane	0.225	0.219	2.7	98	0.00	14.72
109	n-propylbenzene	4.686	4.375	6.6	95	0.00	14.76
110	4-Ethyltoluene			-----NA-----			
111	2-chlorotoluene	1.024	0.936	8.6	95	0.00	14.90
112	4-chlorotoluene	1.009	0.905	10.3	96	0.00	15.00
113	1,3,5-trimethylbenzene	3.753	3.396	9.5	94	0.00	14.91
114	tert-butylbenzene	3.047	2.818	7.5	92	0.00	15.25
115	pentachloroethane	0.672	0.627	6.7	96	0.00	15.33
116	1,2,4-trimethylbenzene	3.663	3.349	8.6	95	0.00	15.29
117	sec-butylbenzene	4.977	4.534	8.9	93	0.00	15.46
118	1,3-dichlorobenzene	2.033	1.823	10.3	96	0.00	15.65
119	p-isopropyltoluene	4.147	3.732	10.0	91	0.00	15.58
120	1,4-dichlorobenzene	1.956	1.845	5.7	96	0.00	15.73
121	1,2-dichlorobenzene	2.045	1.851	9.5	97	0.00	16.12
122	1,4-Diethylbenzene			-----NA-----			
123	n-butylbenzene	2.025	1.922	5.1	91	0.00	16.00
124	1,2,4,5-Tetramethylbenzen			-----NA-----			
125	1,2-dibromo-3-chloropropa	0.212	0.186	12.3	88	0.00	16.88
126	1,3,5-Trichlorobenzene	2.027	1.826	9.9	93	0.00	17.07
127	1,2,4-trichlorobenzene	1.843	1.689	8.4	90	0.00	17.70
128	hexachlorobutadiene	1.026	0.959	6.5	92	0.00	17.82
129	naphthalene	3.771	3.616	4.1	91	0.00	17.97
130	1,2,3-trichlorobenzene	1.837	1.717	6.5	92	0.00	18.21
131	hexachloroethane	0.713	0.647	9.3	94	0.00	16.38
132	Benzyl chloride	1.672	1.664	0.5	107	0.00	15.84

(#= Out of Range  
3C124570.D M3C5689.MSPCC's out = 0 CCC's out = 0  
Wed Nov 04 13:10:15 2015 T

6.9.4

**Initial Calibration Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: VD9588-ICC9588  
Lab FileID: D234792.D

## Response Factor Report MSD

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)

Title : SW-846 Method 8260C

Last Update : Mon Oct 19 09:20:02 2015

Response via : Initial Calibration

## Calibration Files

4	=d234789.D	2	=d234788.D	0.5	=d234786.D	50	=d234792.D
100	=d234793.D	1	=d234787.D	200	=d234794.D	20	=d234791.D
8	=d234790.D	0.2	=d234785.D		=		=

## Compound

	4	2	0.5	50	100	1	200	20	8	0.2	Avg	%RSD
--	---	---	-----	----	-----	---	-----	----	---	-----	-----	------

1) I Tert Butyl Alcohol-d9	-----ISTD-----										
2) 1,4-dioxane											
	0.097	0.095	0.103	0.105	0.098	0.095	0.102	0.101	0.099	3.87	
3) tertiary butyl alcohol											
	1.183	1.114	1.128	1.127	1.153	1.070	1.160	1.124	1.132	2.99	
4) I pentafluorobenzene	-----ISTD-----										
5) 1,2-dichloro-1,2,2-trifluoroet											
									0.000#	-1.00	
6) chlorodifluoromethane											
	0.788	0.770	0.843	0.779	0.762	0.792	0.789	0.744	0.783	3.71	
7) dichlorodifluoromethane											
	1.018	0.958	1.076	1.132	0.907	1.073	1.077	1.095	1.042	7.26	
8) chloromethane											
	0.824	0.756	0.863	0.984	0.984	0.949	0.855	0.846	0.883	9.28	
9) 1,3-butadiene											
									0.000#	-1.00	
10) vinyl chloride											
	0.936	0.865	0.985	0.986	1.061	0.973	1.031	0.933	0.950	0.766	0.949
11) bromomethane											
	0.564	0.630	0.638	0.689	0.839	0.749	0.859	0.605	0.603	0.686	15.56
12) chloroethane											
	0.437	0.448	0.489	0.476	0.559	0.525	0.577	0.448	0.451	0.490	10.59
13) vinyl bromide											
									0.000#	-1.00	
14) trichlorofluoromethane											
	1.058	0.962	1.001	1.130	1.239	1.022	1.224	1.096	1.101	1.093	8.69
15) pentane											
									0.000#	-1.00	
16) ethyl ether											
	0.266	0.264	0.298	0.250	0.249	0.245	0.255	0.239	0.260	0.258	6.66
17) acrolein											
	0.100	0.106	0.096	0.105		0.092	0.098		0.099	5.34	
18) chlorotrifluoroethene											
									0.000#	-1.00	
19) 2-chloropropane											
	1.129	1.144	1.122	1.106	1.126	1.425	1.074	0.981	1.131	1.137	10.43
20) 1,1-dichloroethene											
	0.902	0.824	0.824	0.953	0.978	0.923	0.929	0.820	0.918	0.985	0.906
21) acetone											
	0.033	0.051	0.036	0.037		0.038	0.034	0.037		0.038	15.79
22) allyl chloride											
	1.402	1.330	1.681	1.340	1.349	1.610	1.299	1.253	1.336	1.400	10.41
23) acetonitrile											

**Initial Calibration Summary**

Job Number: JC7097

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234792.D

24)	acetaldehyde	0.045 0.051	0.042 0.042	0.041 0.041 0.042	0.043	8.28
					0.000#	-1.00
25)	iodomethane	0.981 0.963 0.981	1.068 1.119 1.038	1.076 0.936 1.052 1.053	1.027	5.70
26)	iso-butyl alcohol	0.008 0.005	0.007 0.007	0.007 0.006 0.007	0.007#	10.87
27)	carbon disulfide	2.030 1.842 1.909	2.164 2.166 2.056	2.053 1.819 2.063 2.434	2.054	8.76
28)	methylene chloride	0.598 0.571 0.660	0.603 0.630 0.624	0.600 0.553 0.616 0.709	0.616	7.18
29)	1-chloropropane	1.635	1.046 1.031	0.991 1.008 1.345	1.176	22.18
		----- Linear regression -----	Coefficient = 0.9996			
		Response Ratio = 0.05143 + 0.98320 *A				
30)	methyl acetate	0.069	0.065 0.064	0.066 0.065 0.054	0.064	7.79
31)	methyl tert butyl ether	1.881 1.688 2.057	1.819 1.864 2.164	1.781 1.681 1.867	1.867	8.49
32)	trans-1,2-dichloroethene	0.791 0.709 0.738	0.776 0.789 0.810	0.783 0.704 0.792 0.923	0.782	7.90
33)	di-isopropyl ether	1.696 1.622 1.845	1.774 1.828 1.801	1.726 1.718 1.603 1.908	1.752	5.58
34)	ethyl tert-butyl ether	1.758 1.729 1.873	1.922 1.983 1.753	1.887 1.813 1.708 1.829	1.826	4.94
35)	2-butanone	0.049	0.047 0.049	0.050 0.043 0.048	0.048	5.35
36)	1,1-dichloroethane	0.918 0.856 0.905	0.920 0.937 0.909	0.927 0.847 0.934 1.086	0.924	7.02
37)	chloroprene	0.643 0.624 0.559	0.692 0.695 0.644	0.698 0.672 0.652 0.582	0.646	7.32
38)	acrylonitrile	0.161 0.152 0.146	0.159 0.161 0.164	0.159 0.154 0.167	0.158	4.07
39)	vinyl acetate	0.073 0.052	0.088 0.091	0.091 0.090 0.078	0.081	17.86
40)	ethyl acetate	0.061	0.051 0.052	0.050 0.051 0.052	0.053	7.77
41)	2,2-dichloropropane	1.035 0.974 1.195	1.061 1.046 1.089	1.015 0.902 1.049 1.539	1.091	16.03
42)	cis-1,2-dichloroethene	0.611 0.611 0.875	0.559 0.563 0.744	0.570 0.512 0.595 0.556	0.620	17.53
43)	propionitrile	0.060 0.052 0.052	0.059 0.060 0.061	0.060 0.058 0.063 0.049	0.057	8.29
44)	methyl acrylate	0.050	0.058 0.060	0.060 0.052 0.055	0.056	7.31
45)	bromochloromethane	0.257 0.243 0.278	0.254 0.266 0.277	0.266 0.242 0.264 0.170	0.252	12.38
46)	tetrahydrofuran	0.058 0.048	0.054 0.056 0.042	0.057 0.050 0.054	0.052	10.16
47)	chloroform	0.888 0.824 0.897	0.873 0.886 0.935	0.894 0.804 0.884 0.946	0.883	4.89
48)	dibromofluoromethane (s)	0.464 0.463 0.467	0.452 0.461 0.459	0.463 0.457 0.459 0.460	0.461	0.93
49)	1,2-dichloroethane-d4 (s)	0.553 0.548 0.551	0.550 0.562 0.544	0.573 0.547 0.543 0.541	0.551	1.76
50)	freon 113	0.366 0.330	0.424 0.424 0.341	0.415 0.397 0.376	0.384	9.54
51)	methacrylonitrile	0.252 0.223 0.340	0.227 0.232 0.293	0.231 0.227 0.244	0.252	15.69

**Initial Calibration Summary**

Job Number: JC7097

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: D234792.D

Project: Sunoco - Marcus Hook Facility, PA

52)	t-butyl formate	0.513 0.511 0.567 0.589 0.510 0.566 0.533 0.498	0.536	6.33
53)	1,1,1-trichloroethane	0.913 0.839 0.940 1.019 1.032 0.892 1.005 0.858 0.964 1.052 0.952	7.88	
54)	tert-amyl methyl ether	1.673 1.589 1.703 1.776 1.868 1.698 1.822 1.669 1.579 1.881 1.726	6.22	
55)	I 1,4-difluorobenzene	-----ISTD-----		
56)	cyclohexane	0.663 0.581 0.503 0.750 0.757 0.668 0.741 0.610 0.699 0.806 0.678	13.68	
57)	tert amyl alcohol		0.000#	-1.00
58)	2,2,4-trimethylpentane	1.273 1.128 1.562 1.638 1.307 1.564 1.412 1.289	1.397	12.73
59)	epichlorohydrin *This compound does not meet Initial Calibration criteria	0.033 0.028 0.034 0.036 0.031 0.034 0.033 0.033	0.033	7.61
60)	n-butyl alcohol	0.009 0.008 0.010 0.010 0.008 0.010 0.010 0.009	0.009#	9.20
61)	carbon tetrachloride	0.584 0.534 0.495 0.647 0.674 0.609 0.673 0.530 0.592 0.654	0.599	10.65
62)	1,1-dichloropropene	0.469 0.446 0.476 0.497 0.491 0.512 0.508 0.430 0.485 0.530	0.484	6.31
63)	hexane	0.404 0.363 0.418 0.424 0.449 0.408 0.413 0.397	0.410	6.00
64)	benzene	1.434 1.355 1.512 1.449 1.467 1.554 1.484 1.319 1.463 1.859	1.489	9.86
65)	heptane	0.227 0.214 0.163 0.244 0.246 0.279 0.233 0.237 0.222 0.213	0.228	13.06
66)	isopropyl acetate	0.779 0.791 0.775 0.899 0.921 0.847 0.897 0.816 0.766 1.223	0.872	15.59
67)	1,2-dichloroethane	0.494 0.457 0.498 0.500 0.510 0.516 0.519 0.476 0.513 0.593	0.508	7.03
68)	Ethyl Acrylate		0.000#	-1.00
69)	trichloroethene	0.355 0.333 0.383 0.368 0.370 0.363 0.381 0.331 0.374 0.428	0.369	7.42
70)	2-nitropropane	0.577 0.482 0.601 0.547 0.570 0.626 0.561 0.514 0.532	0.557	7.90
71)	2-chloroethyl vinyl ether	0.178 0.176 0.173 0.195 0.209 0.183 0.204 0.190 0.174 0.170	0.185	7.37
72)	methyl methacrylate	0.075 0.056 0.081 0.089	0.089 0.076 0.076	0.078 14.30
73)	tert-amyl ethyl ether		0.000#	-1.00
74)	1,2-dichloropropane	0.346 0.326 0.362 0.364 0.368 0.370 0.365 0.333 0.362 0.383	0.358	4.85
75)	methylcyclohexane	0.627 0.568 0.736 0.766 0.659 0.746 0.674 0.622	0.675	10.31
76)	dibromomethane	0.220 0.214 0.213 0.224 0.234 0.227 0.232 0.214 0.228 0.216	0.222	3.61
77)	bromodichloromethane	0.509 0.474 0.514 0.512 0.533 0.513 0.533 0.474 0.512 0.561	0.514	5.10
78)	cis-1,3-dichloropropene	0.581 0.538 0.614 0.599 0.621 0.631 0.610 0.560 0.590 0.670	0.601	6.22
79)	toluene-d8 (s)	1.255 1.255 1.266 1.296 1.344 1.262 1.300 1.273 1.260 1.256	1.277	2.25
80)	4-methyl-2-pentanone	0.118 0.110 0.127 0.137	0.135 0.118 0.123	0.124 7.91
81)	toluene	0.858 0.794 0.902 0.913 0.958 0.892 0.941 0.820 0.900 1.024	0.900	7.42

6.9.5  
6

**Initial Calibration Summary**

Job Number: JC7097

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: D234792.D

Project: Sunoco - Marcus Hook Facility, PA

82)	3-methyl-1-butanol	0.009 0.008 0.010 0.011 0.011 0.010 0.009	0.010#	11.59
83)	trans-1,3-dichloropropene	0.542 0.502 0.602 0.552 0.589 0.588 0.574 0.519 0.550 0.594 0.561 6.03		
84)	ethyl methacrylate	0.417 0.368 0.395 0.431 0.473 0.431 0.459 0.401 0.416 0.288 0.408 12.74		
85)	1,1,2-trichloroethane	0.244 0.225 0.228 0.248 0.268 0.261 0.261 0.233 0.248 0.303 0.252 9.09		
86)	2-hexanone	0.118 0.105 0.116 0.130 0.101 0.126 0.112 0.112	0.115	8.60
87)	I chlorobenzene-d5	-----ISTD-----		
88)	tetrachloroethene	0.385 0.372 0.388 0.415 0.405 0.387 0.416 0.364 0.398 0.498 0.403 9.31		
89)	1,3-dichloropropane	0.531 0.496 0.473 0.536 0.535 0.506 0.528 0.510 0.547 0.581 0.524 5.72		
90)	butyl acetate	0.205 0.218 0.238 0.213 0.218 0.233 0.212 0.213 0.204 0.207 0.216 5.23		
91)	3,3-dimethyl-1-butanol	0.037 0.034 0.036 0.042 0.042 0.038 0.044 0.041 0.038 0.037 0.039 8.48		
92)	dibromochloromethane	0.375 0.335 0.340 0.390 0.400 0.391 0.407 0.365 0.382 0.413 0.380 6.94		
93)	1,2-dibromoethane	0.335 0.302 0.340 0.322 0.333 0.351 0.329 0.305 0.333 0.386 0.334 7.03		
94)	chlorobenzene	1.059 0.980 1.023 1.051 1.068 1.072 1.070 0.967 1.068 1.184 1.054 5.66		
95)	1,1,1,2-tetrachloroethane	0.452 0.418 0.390 0.477 0.475 0.473 0.497 0.435 0.465 0.462 0.454 7.00		
96)	ethylbenzene	1.896 1.731 1.943 1.900 1.918 1.913 1.901 1.727 1.906 2.344 1.918 8.77		
97)	m,p-xylene	0.694 0.644 0.694 0.731 0.742 0.712 0.761 0.655 0.729 0.757 0.712 5.63		
98)	o-xylene	0.733 0.686 0.734 0.775 0.787 0.752 0.809 0.712 0.759 0.823 0.757 5.63		
99)	styrene	1.177 1.075 1.114 1.220 1.284 1.143 1.311 1.116 1.203 1.262 1.190 6.66		
100)	bromoform	0.274 0.230 0.265 0.287 0.304 0.253 0.317 0.261 0.282 0.223 0.270 11.00		
101)	I 1,4-dichlorobenzene-d	-----ISTD-----		
102)	isopropylbenzene	3.360 3.122 3.364 3.550 3.522 3.468 3.374 3.180 3.466 3.804 3.421 5.63		
103)	4-bromofluorobenzene (s)	0.950 0.961 0.964 0.905 0.932 0.974 0.896 0.936 0.939 0.953 0.941 2.68		
104)	bromobenzene	0.864 0.812 0.818 0.829 0.883 0.922 0.896 0.780 0.847 0.771 0.842 5.90		
105)	cyclohexanone	0.040 0.042 0.037 0.036 0.031 0.038 0.040	0.038	9.42
106)	1,1,2,2-tetrachloroethane	0.846 0.767 0.850 0.803 0.801 0.903 0.763 0.792 0.845 0.879 0.825 5.70		
107)	trans-1,4-dichloro-2-butene	0.267 0.272 0.273 0.249 0.252 0.296 0.239 0.245 0.265 0.300 0.266 7.78		
108)	1,2,3-trichloropropane	0.232 0.220 0.176 0.223 0.234 0.254 0.231 0.223 0.239 0.162 0.219 12.99		
109)	n-propylbenzene	3.906 3.630 3.935 3.904 3.926 4.198 3.725 3.588 3.986 5.133 3.993 10.99		
110)	p-ethyltoluene		0.000#	-1.00
111)	2-chlorotoluene	0.813 0.749 0.855 0.830 0.864 0.901 0.880 0.762 0.838	0.832	6.13

6.9.5  
6

**Initial Calibration Summary**

Job Number: JC7097

Sample: VD9588-ICC9588

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: D234792.D

Project: Sunoco - Marcus Hook Facility, PA

112)	4-chlorotoluene	2.486 2.324 2.934 2.384 2.473 2.789 2.401 2.272 2.460 3.480 2.600 14.28
113)	1,3,5-trimethylbenzene	3.002 2.801 2.949 3.189 3.195 3.219 3.161 2.891 3.115 3.445 3.097 6.08
114)	tert-butylbenzene	2.467 2.243 2.508 2.709 2.585 2.591 2.662 2.367 2.522 3.313 2.597 11.03
115)	pentachloroethane	0.581 0.559 0.606 0.633 0.634 0.584 0.676 0.569 0.586 0.606 0.603 5.89
116)	1,2,4-trimethylbenzene	3.044 2.795 3.105 3.166 3.175 3.176 3.111 2.887 3.109 3.727 3.130 7.84
117)	sec-butylbenzene	3.935 3.598 3.843 4.340 4.175 4.105 4.075 3.819 4.097 4.748 4.073 7.76
118)	1,3-dichlorobenzene	1.778 1.625 1.762 1.762 1.796 1.825 1.808 1.640 1.798 2.153 1.795 7.98
119)	p-isopropyltoluene	3.353 2.986 3.217 3.590 3.515 3.447 3.488 3.136 3.400 4.143 3.427 9.13
120)	1,4-dichlorobenzene	1.781 1.681 1.898 1.792 1.820 1.907 1.828 1.666 1.837 1.801 4.65
121)	1,2,3-trimethylbenzene	0.000# -1.00
122)	Benzyl Chloride	1.854 1.782 2.238 1.783 1.773 1.925 1.679 1.821 1.747 1.845 8.82
123)	p-diethylbenzene	0.000# -1.00
124)	INDANE	0.000# -1.00
125)	1,2-dichlorobenzene	1.781 1.623 1.652 1.807 1.808 1.820 1.789 1.692 1.834 2.081 1.789 7.10
126)	n-butylbenzene	1.736 1.564 1.682 1.859 1.827 1.800 1.805 1.637 1.786 1.964 1.766 6.54
127)	1,2,4,5-tetramethylbenzene	0.000# -1.00
128)	1,2-dibromo-3-chloropropane	0.180 0.179 0.177 0.208 0.202 0.185 0.201 0.194 0.199 0.235 0.196 8.99
129)	1,3,5-trichlorobenzene	1.448 1.289 1.405 1.688 1.632 1.372 1.639 1.463 1.537 1.649 1.512 9.03
130)	1,2,4-trichlorobenzene	1.111 0.936 1.023 1.414 1.350 1.008 1.377 1.189 1.157 1.305 1.187 14.22
131)	hexachlorobutadiene	0.621 0.564 0.585 0.724 0.679 0.634 0.688 0.598 0.632 0.715 0.644 8.58
132)	naphthalene	2.187 1.840 2.816 2.726 1.965 2.662 2.432 2.332 2.370 15.08
133)	1,2,3-trichlorobenzene	0.892 0.792 0.877 1.171 1.139 0.884 1.149 0.998 0.962 1.144 1.001 14.01
134)	hexachloroethane	0.604 0.581 0.664 0.667 0.642 0.675 0.699 0.596 0.617 0.638 6.37

-----  
(#) = Out of Range   ### = Number of calibration levels exceeded format   ###

MD9588.M                  Mon Oct 19 09:22:26 2015                  RPT1

6.9.5  
6

**Initial Calibration Verification**

Job Number: JC7097

Sample: VD9588-ICV9588

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234797.D

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\d234797.D Vial: 14  
 Acq On : 15 Oct 2015 6:02 pm Operator: BenM  
 Sample : icv9588-50 Inst : MSD  
 Misc : ms92609, vd9588, 5.0,,100,5,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)  
 Title : SW-846 Method 8260C  
 Last Update : Mon Oct 19 09:20:02 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	101	0.00	
2 M	1,4-dioxane	0.099	0.109	-10.1	107	0.00	
3 M	tertiary butyl alcohol	1.132	1.194	-5.5	107	0.00	
4 I	pentafluorobenzene	1.000	1.000	0.0	106	0.00	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----			
6 M	chlorodifluoromethane	0.783	0.756	3.4	95	0.01	
7 M	dichlorodifluoromethane	1.042	1.035	0.7	102	0.00	
8 M	chloromethane	0.883	0.854	3.3	105	0.01	
9	1,3-butadiene			-----NA-----			
10 M	vinyl chloride	0.949	0.938	1.2	101	0.00	
11 M	bromomethane	0.686	0.721	-5.1	111	0.00	
12 M	chloroethane	0.490	0.487	0.6	108	0.00	
13 M	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	1.093	1.120	-2.5	105	0.00	
15	pentane			-----NA-----			
16 M	ethyl ether	0.258	0.243	5.8	103	0.00	
17 M	acrolein	0.099	0.105	-6.1	116	0.00	
18 M	chlorotrifluoroethene			-----NA-----			
19 M	2-chloropropane	1.137	1.025	9.9	98	0.00	
20 M	1,1-dichloroethene	0.906	0.876	3.3	97	0.00	
21 M	acetone	0.038	0.037	2.6	109	-0.01	
22 M	allyl chloride	1.400	1.355	3.2	107	0.00	
23 M	acetonitrile	0.043	0.042	2.3	106	0.00	
24 M	acetaldehyde			-----NA-----			
25 M	iodomethane	1.027	1.007	1.9	100	0.00	
26 M	iso-butyl alcohol	0.007	0.005#	28.6	82	0.00	
27 M	carbon disulfide	2.054	1.984	3.4	97	0.00	
28 M	methylene chloride	0.616	0.583	5.4	103	0.00	
29 M	1-chloropropane	50.000	44.905	10.2	95	0.00	
30 M	methyl acetate	0.064	0.064	0.0	104	0.00	
31 M	methyl tert butyl ether	1.867	1.724	7.7	101	0.00	
32 M	trans-1,2-dichloroethene	0.782	0.720	7.9	99	0.00	
33 M	di-isopropyl ether	1.752	1.766	-0.8	106	0.00	
34 M	ethyl tert-butyl ether	1.826	1.888	-3.4	104	0.00	
35 M	2-butanone	0.048	0.048	0.0	109	0.00	
36 M	1,1-dichloroethane	0.924	0.888	3.9	102	0.00	
37 M	chloroprene	0.646	0.673	-4.2	103	0.00	

6.6.9

6

**Initial Calibration Verification**

Job Number: JC7097

Sample: VD9588-ICV9588

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234797.D

38 M	acrylonitrile	0.158	0.159	-0.6	106	0.00	8.33
39 M	vinyl acetate	0.081	0.087	-7.4	104	0.00	8.88
40 M	ethyl acetate	0.053	0.059	-11.3	122	0.00	9.61
41 M	2,2-dichloropropane	1.091	1.003	8.1	100	0.00	9.65
42 M	cis-1,2-dichloroethene	0.620	0.521	16.0	99	0.00	9.65
43 M	propionitrile	0.057	0.059	-3.5	105	0.00	9.76
44	methyl acrylate	0.056	0.058	-3.6	108	0.00	9.70
45 M	bromochloromethane	0.252	0.245	2.8	102	0.00	9.97
46 M	tetrahydrofuran	0.052	0.056	-7.7	109	0.00	10.00
47 M	chloroform	0.883	0.841	4.8	102	0.00	10.02
48 S	dibromofluoromethane (s)	0.461	0.450	2.4	106	0.00	10.22
49 S	1,2-dichloroethane-d4 (s)	0.551	0.536	2.7	103	0.00	10.65
50 M	freon 113	0.384	0.467	-21.6	117	0.00	7.18
51 M	methacrylonitrile	0.252	0.228	9.5	106	0.00	9.92
52 m	t-butyl formate	0.536	0.617	-15.1	115	0.00	10.04
53 M	1,1,1-trichloroethane	0.952	0.954	-0.2	99	0.00	10.26
54 M	tert-amyl methyl ether	1.726	1.770	-2.5	106	0.00	10.70
55 I	1,4-difluorobenzene	1.000	1.000	0.0	105	0.00	11.06
56 M	cyclohexane	0.678	0.689	-1.6	96	0.00	10.31
57	tert amyl alcohol			-----NA-----			
58 M	2,2,4-trimethylpentane	1.397	1.489	-6.6	100	0.00	10.65
59 M	epichlorohydrin			-----NA-----			
60 M	n-butyl alcohol	0.009	0.010#	-11.1	104	0.00	11.21
61 M	carbon tetrachloride	0.599	0.616	-2.8	100	0.00	10.45
62 M	1,1-dichloropropene	0.484	0.480	0.8	101	0.00	10.42
63 M	hexane	0.410	0.312	23.9	78	0.00	8.59
64 M	benzene	1.489	1.399	6.0	101	0.00	10.70
65 M	heptane	0.228	0.244	-7.0	105	0.00	10.80
66 M	isopropyl acetate	0.872	0.867	0.6	101	0.00	10.60
67 M	1,2-dichloroethane	0.508	0.496	2.4	104	0.00	10.74
68	Ethyl Acrylate			-----NA-----			
69 M	trichloroethene	0.369	0.350	5.1	100	0.00	11.40
70 M	2-nitropropane	0.557	0.594	-6.6	114	0.00	11.67
71 M	2-chloroethyl vinyl ether	0.185	0.227	-22.7	122	0.00	12.22
72 M	methyl methacrylate	0.078	0.091	-16.7	118	0.00	11.67
73 M	tert-amyl ethyl ether			-----NA-----			
74 M	1,2-dichloropropane	0.358	0.368	-2.8	106	0.00	11.69
75 M	methylcyclohexane	0.675	0.719	-6.5	102	0.00	11.60
76 M	dibromomethane	0.222	0.222	0.0	104	0.00	11.87
77 M	bromodichloromethane	0.514	0.503	2.1	103	0.00	11.99
78 M	cis-1,3-dichloropropene	0.601	0.614	-2.2	107	0.00	12.46
79 S	toluene-d8 (s)	1.277	1.355	-6.1	110	0.00	12.75
80 M	4-methyl-2-pentanone	0.124	0.144	-16.1	119	0.00	12.55
81 M	toluene	0.900	0.932	-3.6	107	0.00	12.83
82 M	3-methyl-1-butanol	0.010	0.016	-60.0#	163	0.00	12.57
83 M	trans-1,3-dichloropropene	0.561	0.592	-5.5	112	0.00	13.05
84 M	ethyl methacrylate	0.408	0.500	-22.5	122	0.00	13.01
85 M	1,1,2-trichloroethane	0.252	0.276	-9.5	117	0.00	13.29
86 M	2-hexanone	0.115	0.144	-25.2	130	0.00	13.46
87 I	chlorobenzene-d5	1.000	1.000	0.0	122	0.00	14.40
88 M	tetrachloroethene	0.403	0.365	9.4	108	0.00	13.44
89 M	1,3-dichloropropane	0.524	0.515	1.7	117	0.00	13.49
90 M	butyl acetate	0.216	0.236	-9.3	135	0.00	13.51
91 m	3,3-dimethyl-1-butanol	0.039	0.036	7.7	106	0.00	13.64
92 M	dibromochloromethane	0.380	0.368	3.2	115	0.00	13.78
93 M	1,2-dibromoethane	0.334	0.321	3.9	122	0.00	13.95
94 M	chlorobenzene	1.054	1.039	1.4	121	0.00	14.43
95 M	1,1,1,2-tetrachloroethane	0.454	0.395	13.0	101	0.00	14.50

6.9.6  
6

**Initial Calibration Verification**

Job Number: JC7097

Sample: VD9588-ICV9588

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D234797.D

96 M	ethylbenzene	1.918	1.820	5.1	117	0.00	14.47
97 M	m,p-xylene	0.712	0.704	1.1	118	0.00	14.58
98 M	o-xylene	0.757	0.723	4.5	114	0.00	15.06
99 M	styrene	1.190	1.262	-6.1	127	0.00	15.07
100 M	bromoform	0.270	0.296	-9.6	126	0.00	15.41
101 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	122	0.00	16.97
102 M	isopropylbenzene	3.421	3.121	8.8	107	0.00	15.43
103 S	4-bromofluorobenzene (s)	0.941	0.967	-2.8	130	0.00	15.68
104 M	bromobenzene	0.842	0.862	-2.4	127	0.00	15.90
105 M	cyclohexanone	0.038	0.033	13.2	106	0.00	15.67
106 M	1,1,2,2-tetrachloroethane	0.825	0.747	9.5	113	0.00	15.81
107 M	trans-1,4-dichloro-2-bute	0.266	0.258	3.0	126	0.00	15.84
108 M	1,2,3-trichloropropane	0.219	0.220	-0.5	120	0.00	15.89
109 M	n-propylbenzene	3.993	3.963	0.8	124	0.00	15.88
110 M	p-ethyltoluene			-----NA-----			
111 M	2-chlorotoluene	0.832	0.795	4.4	117	0.00	16.06
112 M	4-chlorotoluene	2.600	2.449	5.8	125	0.00	16.17
113 M	1,3,5-trimethylbenzene	3.097	2.834	8.5	108	0.00	16.04
114 M	tert-butylbenzene	2.597	2.193	15.6	98	0.00	16.44
115 M	pentachloroethane	0.603	0.538	10.8	103	0.00	16.56
116 M	1,2,4-trimethylbenzene	3.130	3.018	3.6	116	0.00	16.49
117 M	sec-butylbenzene	4.073	3.671	9.9	103	0.00	16.67
118 M	1,3-dichlorobenzene	1.795	1.709	4.8	118	0.00	16.91
119 M	p-isopropyltoluene	3.427	3.197	6.7	108	0.00	16.80
120 M	1,4-dichlorobenzene	1.801	1.754	2.6	119	0.00	17.00
121	1,2,3-trimethylbenzene			-----NA-----			
122	Benzyl Chloride	1.845	1.739	5.7	119	0.00	17.14
123 M	p-diethylbenzene			-----NA-----			
124	INDANE			-----NA-----			
125 M	1,2-dichlorobenzene	1.789	1.676	6.3	113	0.00	17.45
126 M	n-butylbenzene	1.766	1.725	2.3	113	0.00	17.26
127 M	1,2,4,5-tetramethylbenzen			-----NA-----			
128 M	1,2-dibromo-3-chloropropane	0.196	0.175	10.7	102	0.00	18.32
129 M	1,3,5-trichlorobenzene	1.512	1.384	8.5	100	0.00	18.49
130 M	1,2,4-trichlorobenzene	1.187	1.140	4.0	98	0.00	19.23
131 M	hexachlorobutadiene	0.644	0.570	11.5	96	0.00	19.33
132 M	naphthalene	2.370	2.209	6.8	95	0.00	19.56
133 M	1,2,3-trichlorobenzene	1.001	0.935	6.6	97	0.00	19.84
134 M	hexachloroethane	0.638	0.539	15.5	98	0.00	17.71
-----							
-----							

( # ) = Out of Range  
d234792.D MD9588.MSPCC's out = 0 CCC's out = 0  
Mon Oct 19 09:22:02 2015 RPT16.9.6  
6

# Continuing Calibration Summary

Page 1 of 3

Job Number: JC7097

Sample: VD9618-CC9588

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: D235557.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\d235557.D Vial: 2  
 Acq On : 6 Nov 2015 7:45 am Operator: BenM  
 Sample : cc9588-20 Inst : MSD  
 Misc : ms93780, vd9618, 5,,100,5,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)  
 Title : SW-846 Method 8260C  
 Last Update : Thu Nov 05 07:40:57 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	80	-0.04	
2 M	1,4-dioxane	0.099	0.095	4.0	74	0.00	
3 M	tertiary butyl alcohol	1.132	1.214	-7.2	84	-0.01	
4 I	pentafluorobenzene	1.000	1.000	0.0	75	0.00	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----			
6 M	chlorodifluoromethane	0.783	1.164	-48.7#	111	0.02	
7 M	dichlorodifluoromethane	1.042	1.129	-8.3	79	0.02	
8 M	chloromethane	0.883	1.172	-32.7#	103	0.01	
9	1,3-butadiene			-----NA-----			
10 M	vinyl chloride	0.949	1.199	-26.3#	97	0.01	
11 M	bromomethane	0.686	0.606	11.7	76	0.00	
12 M	chloroethane	0.490	0.484	1.2	81	0.00	
13 M	vinyl bromide			-----NA-----			
14 M	trichlorofluoromethane	1.093	1.046	4.3	72	0.00	
15	pentane			-----NA-----			
16 M	ethyl ether	0.258	0.257	0.4	81	0.00	
17 M	acrolein	0.099	0.108	-9.1	89	0.00	
18 M	chlorotrifluoroethene			-----NA-----			
19 M	2-chloropropane	1.137	1.179	-3.7	91	0.00	
20 M	1,1-dichloroethene	0.906	0.877	3.2	81	0.00	
21 M	acetone	0.038	0.032	15.8	70	0.00	
22 M	allyl chloride	1.400	1.543	-10.2	93	0.00	
23 M	acetonitrile	0.043	0.049	-14.0	90	-0.01	
24 M	acetaldehyde			-----NA-----			
25 M	iodomethane	1.027	0.928	9.6	75	0.00	
26 M	iso-butyl alcohol	0.007	0.007#	0.0	79	0.00	
27 M	carbon disulfide	2.054	2.099	-2.2	87	-0.01	
28 M	methylene chloride	0.616	0.587	4.7	80	0.00	
29 M	1-chloropropane	20.000	20.982	True Calc. -4.9	87	0.00	
30 M	methyl acetate	0.064	0.065	% Drift -1.6	76	0.00	
31 M	methyl tert butyl ether	1.867	1.745	% Dev 6.5	78	0.00	
32 M	trans-1,2-dichloroethene	0.782	0.795	-1.7	85	0.00	
33 M	di-isopropyl ether	1.752	1.970	-12.4	86	0.00	
34 M	ethyl tert-butyl ether	1.826	1.928	-5.6	80	0.00	
35 M	2-butanone	0.048	0.045	6.3	80	0.00	
36 M	1,1-dichloroethane	0.924	0.964	-4.3	86	0.00	
37 M	chloroprene	0.646	0.773	-19.7	87	0.00	

6.9.7  
6

## Continuing Calibration Summary

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: VD9618-CC9588  
Lab FileID: D235557.D

38 M	acrylonitrile	0.158	0.172	-8.9	84	0.00	8.33
39 M	vinyl acetate	0.081	0.085	-4.9	71	0.00	8.88
40 M	ethyl acetate	0.053	0.057	-7.5	85	0.00	9.61
41 M	2,2-dichloropropane	1.091	1.080	1.0	90	0.00	9.64
42 M	cis-1,2-dichloroethene	0.620	0.553	10.8	81	0.00	9.64
43 M	propionitrile	0.057	0.065	-14.0	84	0.00	9.75
44	methyl acrylate	0.056	0.051	8.9	73	0.00	9.70
45 M	bromochloromethane	0.252	0.245	2.8	76	0.00	9.96
46 M	tetrahydrofuran	0.052	0.056	-7.7	85	0.00	10.00
47 M	chloroform	0.883	0.869	1.6	81	0.00	10.01
48 S	dibromofluoromethane (s)	0.461	0.475	-3.0	78	0.00	10.21
49 S	1,2-dichloroethane-d4 (s)	0.551	0.565	-2.5	78	0.00	10.64
50 M	freon 113	0.384	0.436	-13.5	83	0.00	7.18
51 M	methacrylonitrile	0.252	0.249	1.2	83	0.00	9.91
52 m	t-butyl formate	0.536	0.562	-4.9	79	0.00	10.03
53 M	1,1,1-trichloroethane	0.952	0.916	3.8	80	0.00	10.25
54 M	tert-amyl methyl ether	1.726	1.763	-2.1	80	0.00	10.69
55 I	1,4-difluorobenzene	1.000	1.000	0.0	78	0.00	11.05
56 M	cyclohexane	0.678	0.691	-1.9	88	0.00	10.30
57	tert amyl alcohol			-----NA-----			
58 M	2,2,4-trimethylpentane	1.397	1.111	20.5#	61	-0.01	10.63
59 M	epichlorohydrin	0.033	0.031	6.1	72	0.00	12.37
60 M	n-butyl alcohol	0.009	0.011	-22.2#	85	0.00	11.20
61 M	carbon tetrachloride	0.599	0.543	9.3	80	0.00	10.44
62 M	1,1-dichloropropene	0.484	0.465	3.9	84	0.00	10.41
63 M	hexane	0.410	0.403	1.7	76	0.00	8.58
64 M	benzene	1.489	1.433	3.8	85	0.00	10.69
65 M	heptane	0.228	0.196	14.0	64	0.00	10.80
66 M	isopropyl acetate	0.872	0.775	11.1	74	0.00	10.59
67 M	1,2-dichloroethane	0.508	0.465	8.5	76	0.00	10.73
68	Ethyl Acrylate			-----NA-----			
69 M	trichloroethene	0.369	0.340	7.9	80	0.00	11.40
70 M	2-nitropropane	0.557	0.510	8.4	77	0.00	11.67
71 M	2-chloroethyl vinyl ether	0.185	0.185	0.0	76	0.00	12.21
72 M	methyl methacrylate	0.078	0.067	14.1	69	0.00	11.66
73 M	tert-amyl ethyl ether			-----NA-----			
74 M	1,2-dichloropropane	0.358	0.363	-1.4	85	0.00	11.68
75 M	methylcyclohexane	0.675	0.637	5.6	74	0.00	11.60
76 M	dibromomethane	0.222	0.202	9.0	73	0.00	11.86
77 M	bromodichloromethane	0.514	0.463	9.9	76	0.00	11.98
78 M	cis-1,3-dichloropropene	0.601	0.558	7.2	78	0.00	12.45
79 S	toluene-d8 (s)	1.277	1.269	0.6	78	0.00	12.74
80 M	4-methyl-2-pentanone	0.124	0.127	-2.4	83	0.00	12.55
81 M	toluene	0.900	0.831	7.7	79	0.00	12.82
82 M	3-methyl-1-butanol	0.010	0.011	-10.0	81	0.00	12.57
83 M	trans-1,3-dichloropropene	0.561	0.496	11.6	74	0.00	13.05
84 M	ethyl methacrylate	0.408	0.374	8.3	73	0.00	13.00
85 M	1,1,2-trichloroethane	0.252	0.228	9.5	76	0.00	13.28
86 M	2-hexanone	0.115	0.104	9.6	72	0.00	13.46
87 I	chlorobenzene-d5	1.000	1.000	0.0	75	0.00	14.39
88 M	tetrachloroethene	0.403	0.349	13.4	72	0.00	13.44
89 M	1,3-dichloropropane	0.524	0.515	1.7	76	-0.01	13.48
90 M	butyl acetate	0.216	0.214	0.9	76	0.00	13.50
91 m	3,3-dimethyl-1-butanol	0.039	0.044	-12.8	81	0.00	13.64
92 M	dibromochloromethane	0.380	0.334	12.1	69	0.00	13.77
93 M	1,2-dibromoethane	0.334	0.289	13.5	71	0.00	13.94
94 M	chlorobenzene	1.054	0.938	11.0	73	0.00	14.43
95 M	1,1,1,2-tetrachloroethane	0.454	0.441	2.9	77	0.00	14.49

## Continuing Calibration Summary

Job Number: JC7097

Sample: VD9618-CC9588

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D235557.D

96 M	ethylbenzene	1.918	1.787	6.8	78	0.00	14.47
97 M	m,p-xylene	0.712	0.670	5.9	77	0.00	14.58
98 M	o-xylene	0.757	0.729	3.7	77	0.00	15.05
99 M	styrene	1.190	1.075	9.7	73	0.00	15.07
100 M	bromoform	0.270	0.234	13.3	68	0.00	15.40
101 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	74	0.00	16.97
102 M	isopropylbenzene	3.421	3.384	1.1	79	0.00	15.42
103 S	4-bromofluorobenzene (s)	0.941	0.948	-0.7	75	0.00	15.67
104 M	bromobenzene	0.842	0.745	11.5	71	0.00	15.89
105 M	cyclohexanone	0.038	0.002#	94.7#	3#	0.21	15.88
106 M	1,1,2,2-tetrachloroethane	0.825	0.807	2.2	76	0.00	15.80
107 M	trans-1,4-dichloro-2-bute	0.266	0.243	8.6	74	0.00	15.84
108 M	1,2,3-trichloropropane	0.219	0.209	4.6	69	0.00	15.89
109 M	n-propylbenzene	3.993	3.711	7.1	77	0.00	15.87
110 M	p-ethyltoluene			-----NA-----			
111 M	2-chlorotoluene	0.832	0.782	6.0	76	0.00	16.06
112 M	4-chlorotoluene	2.600	2.324	10.6	76	0.00	16.17
113 M	1,3,5-trimethylbenzene	3.097	3.018	2.6	78	0.00	16.04
114 M	tert-butylbenzene	2.597	2.392	7.9	75	0.00	16.43
115 M	pentachloroethane	0.603	0.591	2.0	77	0.00	16.55
116 M	1,2,4-trimethylbenzene	3.130	3.052	2.5	79	0.00	16.48
117 M	sec-butylbenzene	4.073	3.839	5.7	75	0.00	16.66
118 M	1,3-dichlorobenzene	1.795	1.623	9.6	74	0.00	16.90
119 M	p-isopropyltoluene	3.427	3.142	8.3	74	0.00	16.79
120 M	1,4-dichlorobenzene	1.801	1.660	7.8	74	0.00	17.00
121	1,2,3-trimethylbenzene			-----NA-----			
122	Benzyl Chloride	1.845	2.159	-17.0	88	0.00	17.13
123 M	p-diethylbenzene			-----NA-----			
124	INDANE			-----NA-----			
125 M	1,2-dichlorobenzene	1.789	1.734	3.1	76	0.00	17.44
126 M	n-butylbenzene	1.766	1.663	5.8	76	0.00	17.25
127 M	1,2,4,5-tetramethylbenzen			-----NA-----			
128 M	1,2-dibromo-3-chloropropane	0.196	0.178	9.2	68	0.00	18.31
129 M	1,3,5-trichlorobenzene	1.512	1.447	4.3	74	0.00	18.48
130 M	1,2,4-trichlorobenzene	1.187	1.216	-2.4	76	0.00	19.22
131 M	hexachlorobutadiene	0.644	0.525	18.5	65	0.00	19.32
132 M	naphthalene	2.370	2.529	-6.7	77	0.00	19.56
133 M	1,2,3-trichlorobenzene	1.001	0.965	3.6	72	0.00	19.83
134 M	hexachloroethane	0.638	0.599	6.1	75	0.00	17.70
<hr/>							
<hr/>							

( # ) = Out of Range  
d234791.D MD9588.MSPCC's out = 0 CCC's out = 0  
Fri Nov 06 14:35:21 2015 RPT16.9.7  
6

# Continuing Calibration Summary

Page 1 of 3

Job Number: JC7097

Sample: VD9618-CC9588

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: D235582.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\VD9618-9619\d235582.D Vial: 27  
 Acq On : 6 Nov 2015 9:01 pm Operator: BenM  
 Sample : cc9588-50 Inst : MSD  
 Misc : ms93675, vd9618, 6.2,,5,5,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)  
 Title : SW-846 Method 8260C  
 Last Update : Mon Oct 19 11:56:02 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	81	0.00
2 M	1,4-dioxane	0.099	0.103	-4.0	81	-0.01
3 M	tertiary butyl alcohol	1.132	1.188	-4.9	85	-0.01
4 I	pentafluorobenzene	1.000	1.000	0.0	83	0.00
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----		
6 M	chlorodifluoromethane	0.783	1.154	-47.4#	114	0.01
7 M	dichlorodifluoromethane	1.042	1.095	-5.1	85	0.02
8 M	chloromethane	0.883	1.107	-25.4#	107	0.02
9	1,3-butadiene			-----NA-----		
10 M	vinyl chloride	0.949	1.129	-19.0	96	0.03
11 M	bromomethane	0.686	0.660	3.8	80	0.01
12 M	chloroethane	0.490	0.506	-3.3	89	0.00
13 M	vinyl bromide			-----NA-----		
14 M	trichlorofluoromethane	1.093	1.041	4.8	77	0.00
15	pentane			-----NA-----		
16 M	ethyl ether	0.258	0.276	-7.0	92	0.00
17 M	acrolein	0.099	0.106	-7.1	92	-0.01
18 M	chlorotrifluoroethene			-----NA-----		
19 M	2-chloropropane	1.137	1.233	-8.4	93	-0.01
20 M	1,1-dichloroethene	0.906	0.974	-7.5	85	0.00
21 M	acetone	0.038	0.039	-2.6	91	0.00
22 M	allyl chloride	1.400	1.535	-9.6	96	0.00
23 M	acetonitrile	0.043	0.047	-9.3	94	0.00
24 M	acetaldehyde			-----NA-----		
25 M	iodomethane	1.027	1.006	2.0	79	0.00
26 M	iso-butyl alcohol	0.007	0.007#	0.0	90	0.00
27 M	carbon disulfide	2.054	2.234	-8.8	86	0.00
28 M	methylene chloride	0.616	0.630	-2.3	87	0.00
29 M	1-chloropropane	50.000	55.647	-11.3	91	0.00
30 M	methyl acetate	0.064	0.068	-6.3	88	0.00
31 M	methyl tert butyl ether	1.867	1.860	0.4	85	0.00
32 M	trans-1,2-dichloroethene	0.782	0.850	-8.7	91	0.00
33 M	di-isopropyl ether	1.752	2.079	-18.7	98	0.00
34 M	ethyl tert-butyl ether	1.826	2.052	-12.4	89	0.00
35 M	2-butanone	0.048	0.052	-8.3	91	0.00
36 M	1,1-dichloroethane	0.924	1.028	-11.3	93	0.00
37 M	chloroprene	0.646	0.852	-31.9#	103	0.00

6.9.8  
6

## Continuing Calibration Summary

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: VD9618-CC9588  
Lab FileID: D235582.D

38 M	acrylonitrile	0.158	0.174	-10.1	91	0.00	8.33
39 M	vinyl acetate	0.081	0.093	-14.8	88	0.00	8.88
40 M	ethyl acetate	0.053	0.058	-9.4	95	0.00	9.61
41 M	2,2-dichloropropane	1.091	1.047	4.0	82	0.00	9.64
42 M	cis-1,2-dichloroethene	0.620	0.613	1.1	92	0.00	9.65
43 M	propionitrile	0.057	0.069	-21.1#	96	0.00	9.76
44	methyl acrylate	0.056	0.060	-7.1	87	0.00	9.70
45 M	bromochloromethane	0.252	0.267	-6.0	88	0.00	9.97
46 M	tetrahydrofuran	0.052	0.061	-17.3	94	0.00	10.00
47 M	chloroform	0.883	0.939	-6.3	90	0.00	10.01
48 S	dibromofluoromethane (s)	0.461	0.473	-2.6	87	0.00	10.22
49 S	1,2-dichloroethane-d4 (s)	0.551	0.565	-2.5	86	0.00	10.64
50 M	freon 113	0.384	0.468	-21.9#	92	0.00	7.18
51 M	methacrylonitrile	0.252	0.265	-5.2	97	0.00	9.91
52 m	t-butyl formate	0.536	0.586	-9.3	86	0.00	10.03
53 M	1,1,1-trichloroethane	0.952	0.987	-3.7	81	0.00	10.25
54 M	tert-amyl methyl ether	1.726	1.894	-9.7	89	0.00	10.69
55 I	1,4-difluorobenzene	1.000	1.000	0.0	88	0.00	11.05
56 M	cyclohexane	0.678	0.725	-6.9	85	0.00	10.31
57	tert amyl alcohol			-----NA-----			
58 M	2,2,4-trimethylpentane	1.397	1.243	11.0	70	0.00	10.64
59 M	epichlorohydrin	0.033	0.034	-3.0	89	0.00	12.37
60 M	n-butyl alcohol	0.009	0.010	-11.1	93	0.00	11.20
61 M	carbon tetrachloride	0.599	0.583	2.7	79	0.00	10.44
62 M	1,1-dichloropropene	0.484	0.514	-6.2	91	0.00	10.42
63 M	hexane	0.410	0.419	-2.2	88	0.00	8.58
64 M	benzene	1.489	1.547	-3.9	94	0.00	10.69
65 M	heptane	0.228	0.207	9.2	75	0.00	10.80
66 M	isopropyl acetate	0.872	0.848	2.8	83	0.00	10.59
67 M	1,2-dichloroethane	0.508	0.505	0.6	89	0.00	10.73
68	Ethyl Acrylate			-----NA-----			
69 M	trichloroethene	0.369	0.375	-1.6	90	0.00	11.40
70 M	2-nitropropane	0.557	0.572	-2.7	92	0.00	11.67
71 M	2-chloroethyl vinyl ether	0.185	0.203	-9.7	92	0.00	12.21
72 M	methyl methacrylate	0.078	0.077	1.3	84	0.00	11.66
73 M	tert-amyl ethyl ether			-----NA-----			
74 M	1,2-dichloropropane	0.358	0.397	-10.9	96	0.00	11.69
75 M	methylcyclohexane	0.675	0.680	-0.7	81	0.00	11.60
76 M	dibromomethane	0.222	0.219	1.4	86	0.00	11.87
77 M	bromodichloromethane	0.514	0.512	0.4	88	0.00	11.99
78 M	cis-1,3-dichloropropene	0.601	0.608	-1.2	90	0.00	12.45
79 S	toluene-d8 (s)	1.277	1.291	-1.1	88	0.00	12.74
80 M	4-methyl-2-pentanone	0.124	0.136	-9.7	95	0.00	12.55
81 M	toluene	0.900	0.921	-2.3	89	0.00	12.82
82 M	3-methyl-1-butanol	0.010	0.011	-10.0	89	0.00	12.57
83 M	trans-1,3-dichloropropene	0.561	0.545	2.9	87	0.00	13.05
84 M	ethyl methacrylate	0.408	0.436	-6.9	89	0.00	13.00
85 M	1,1,2-trichloroethane	0.252	0.252	0.0	90	0.00	13.29
86 M	2-hexanone	0.115	0.117	-1.7	89	0.00	13.45
87 I	chlorobenzene-d5	1.000	1.000	0.0	87	0.00	14.39
88 M	tetrachloroethene	0.403	0.387	4.0	81	0.00	13.44
89 M	1,3-dichloropropane	0.524	0.549	-4.8	89	-0.01	13.48
90 M	butyl acetate	0.216	0.226	-4.6	93	0.00	13.51
91 m	3,3-dimethyl-1-butanol	0.039	0.043	-10.3	89	0.00	13.64
92 M	dibromochloromethane	0.380	0.372	2.1	83	0.00	13.77
93 M	1,2-dibromoethane	0.334	0.312	6.6	85	-0.01	13.94
94 M	chlorobenzene	1.054	1.029	2.4	85	0.00	14.42
95 M	1,1,1,2-tetrachloroethane	0.454	0.464	-2.2	85	0.00	14.49

6.9.8  
6

## Continuing Calibration Summary

Job Number: JC7097

Sample: VD9618-CC9588

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: D235582.D

96 M	ethylbenzene	1.918	1.919	-0.1	88	0.00	14.47
97 M	m,p-xylene	0.712	0.721	-1.3	86	0.00	14.58
98 M	o-xylene	0.757	0.777	-2.6	88	0.00	15.05
99 M	styrene	1.190	1.200	-0.8	86	0.00	15.07
100 M	bromoform	0.270	0.258	4.4	79	0.00	15.40
101 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	83	-0.01	16.97
102 M	isopropylbenzene	3.421	3.670	-7.3	85	0.00	15.42
103 S	4-bromofluorobenzene (s)	0.941	0.954	-1.4	87	-0.01	15.67
104 M	bromobenzene	0.842	0.833	1.1	83	-0.01	15.89
105 M	cyclohexanone	0.038	0.024	36.8#	52	-0.01	15.66
106 M	1,1,2,2-tetrachloroethane	0.825	0.854	-3.5	88	0.00	15.80
107 M	trans-1,4-dichloro-2-bute	0.266	0.248	6.8	82	0.00	15.84
108 M	1,2,3-trichloropropane	0.219	0.223	-1.8	82	0.00	15.89
109 M	n-propylbenzene	3.993	4.005	-0.3	85	-0.01	15.87
110 M	p-ethyltoluene			-----NA-----			
111 M	2-chlorotoluene	0.832	0.841	-1.1	84	-0.01	16.05
112 M	4-chlorotoluene	2.600	2.507	3.6	87	0.00	16.17
113 M	1,3,5-trimethylbenzene	3.097	3.215	-3.8	83	0.00	16.03
114 M	tert-butylbenzene	2.597	2.595	0.1	79	-0.01	16.43
115 M	pentachloroethane	0.603	0.639	-6.0	83	0.00	16.55
116 M	1,2,4-trimethylbenzene	3.130	3.221	-2.9	84	0.00	16.48
117 M	sec-butylbenzene	4.073	4.084	-0.3	78	0.00	16.67
118 M	1,3-dichlorobenzene	1.795	1.748	2.6	82	0.00	16.90
119 M	p-isopropyltoluene	3.427	3.315	3.3	76	0.00	16.79
120 M	1,4-dichlorobenzene	1.801	1.770	1.7	81	0.00	17.00
121	1,2,3-trimethylbenzene			-----NA-----			
122	Benzyl Chloride	1.845	1.844	0.1	85	0.00	17.13
123 M	p-diethylbenzene			-----NA-----			
124	INDANE			-----NA-----			
125 M	1,2-dichlorobenzene	1.789	1.806	-1.0	82	0.00	17.44
126 M	n-butylbenzene	1.766	1.709	3.2	76	0.00	17.25
127 M	1,2,4,5-tetramethylbenzen			-----NA-----			
128 M	1,2-dibromo-3-chloropropane	0.196	0.183	6.6	73	0.00	18.31
129 M	1,3,5-trichlorobenzene	1.512	1.400	7.4	68	0.00	18.48
130 M	1,2,4-trichlorobenzene	1.187	1.178	0.8	69	0.00	19.22
131 M	hexachlorobutadiene	0.644	0.510	20.8#	58	0.00	19.32
132 M	naphthalene	2.370	2.440	-3.0	71	0.00	19.55
133 M	1,2,3-trichlorobenzene	1.001	0.918	8.3	65	0.00	19.83
134 M	hexachloroethane	0.638	0.628	1.6	78	0.00	17.71
<hr/>							
<hr/>							

(#= Out of Range  
d234792.D MD9588.MSPCC's out = 0 CCC's out = 0  
Mon Nov 09 07:31:41 2015 T6.9.8  
6



## GC/MS Volatiles

---

### Raw Data

---

7

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5693-5694\  
 Data File : 3C124690.D  
 Acq On : 2 Nov 2015 9:50 am  
 Operator : PrashanS  
 Sample : JC7097-1  
 Misc : MS93595,V3C5694,5.8,,,1  
 ALS Vial : 47 Sample Multiplier: 1

Quant Time: Nov 02 14:23:02 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

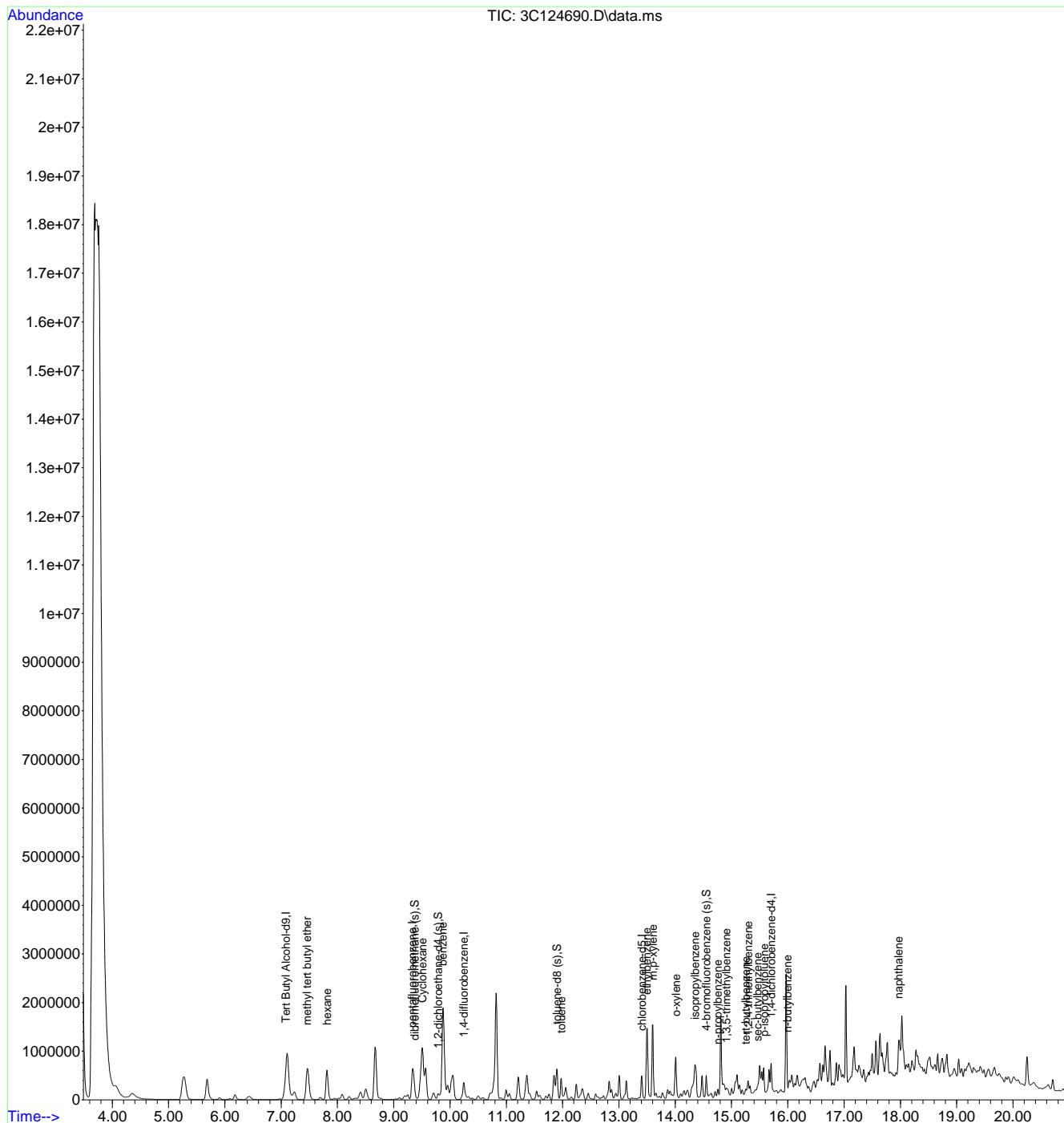
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
1) Tert Butyl Alcohol-d9	7.083	65	113443	500.00	ug/L	0.00
5) pentafluorobenzene	9.327	168	254616	50.00	ug/L	0.00
55) 1,4-difluorobenzene	10.243	114	311209	50.00	ug/L	0.00
84) chlorobenzene-d5	13.407	117	275106	50.00	ug/L	0.00
100) 1,4-dichlorobenzene-d4	15.703	152	150014	50.00	ug/L	0.00
<b>System Monitoring Compounds</b>						
46) dibromofluoromethane (s)	9.369	113	92525	50.98	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery =	101.96%		
47) 1,2-dichloroethane-d4 (s)	9.787	65	89844	50.59	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery =	101.18%		
76) toluene-d8 (s)	11.900	98	393807	52.38	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery =	104.76%		
102) 4-bromofluorobenzene (s)	14.552	95	144829	49.09	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery =	98.18%		
<b>Target Compounds</b>						
				Qvalue		
28) methyl tert butyl ether	7.460	73	70829	9.09	ug/L	# 1
51) Cyclohexane	9.510	84	566998	114.71	ug/L	# 48
60) hexane	7.816	57	425851	137.39	ug/L	99
61) benzene	9.871	78	750498	79.59	ug/L	99
78) toluene	11.974	91	193066	19.77	ug/L	99
93) ethylbenzene	13.490	91	613345	50.44	ug/L	98
94) m,p-xylene	13.600	106	437409	95.96	ug/L	99
95) o-xylene	14.014	91	335967	33.12	ug/L	96
101) isopropylbenzene	14.353	105	99774	7.65	ug/L	98
109) n-propylbenzene	14.756	91	119344	8.49	ug/L	97
113) 1,3,5-trimethylbenzene	14.908	105	65426	5.81	ug/L	98
114) tert-butylbenzene	15.253	119	5061	0.55	ug/L	93
116) 1,2,4-trimethylbenzene	15.295	105	155601	14.16	ug/L	98
117) sec-butylbenzene	15.462	105	15274	1.02	ug/L	96
119) p-isopropyltoluene	15.583	119	6074	0.49	ug/L	91
123) n-butylbenzene	15.991	92	4003	0.66	ug/L	93
129) naphthalene	17.968	128	28420	2.51	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

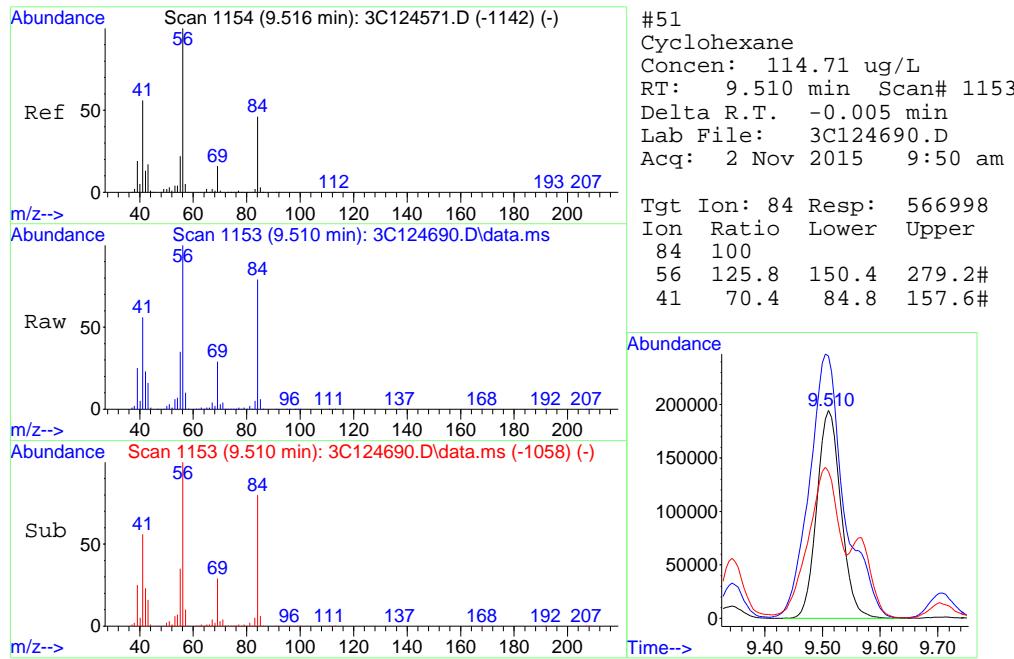
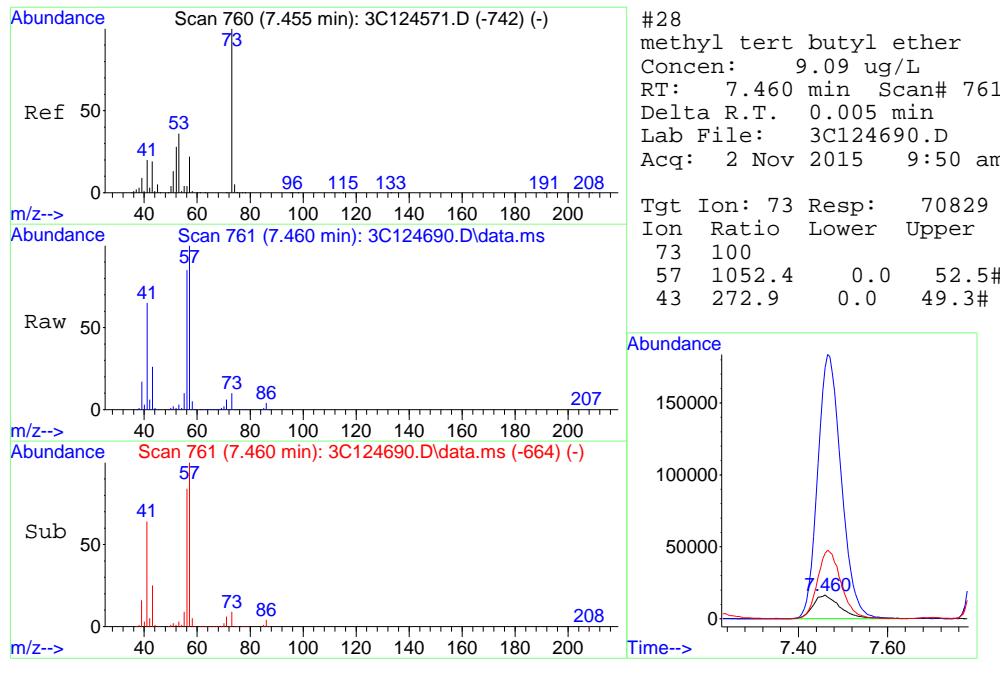
Data Path : C:\msdchem\1\DATA\3C\v3c5693-5694\  
 Data File : 3C124690.D  
 Acq On : 2 Nov 2015 9:50 am  
 Operator : PrashanS  
 Sample : JC7097-1  
 Misc : MS93595,V3C5694,5.8,,,1  
 ALS Vial : 47 Sample Multiplier: 1

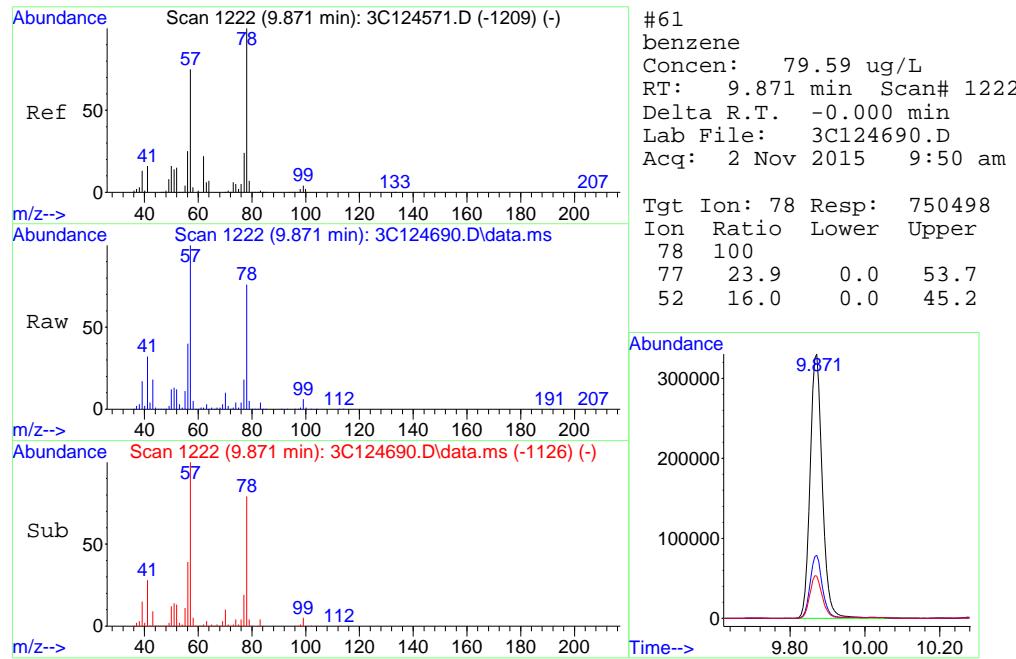
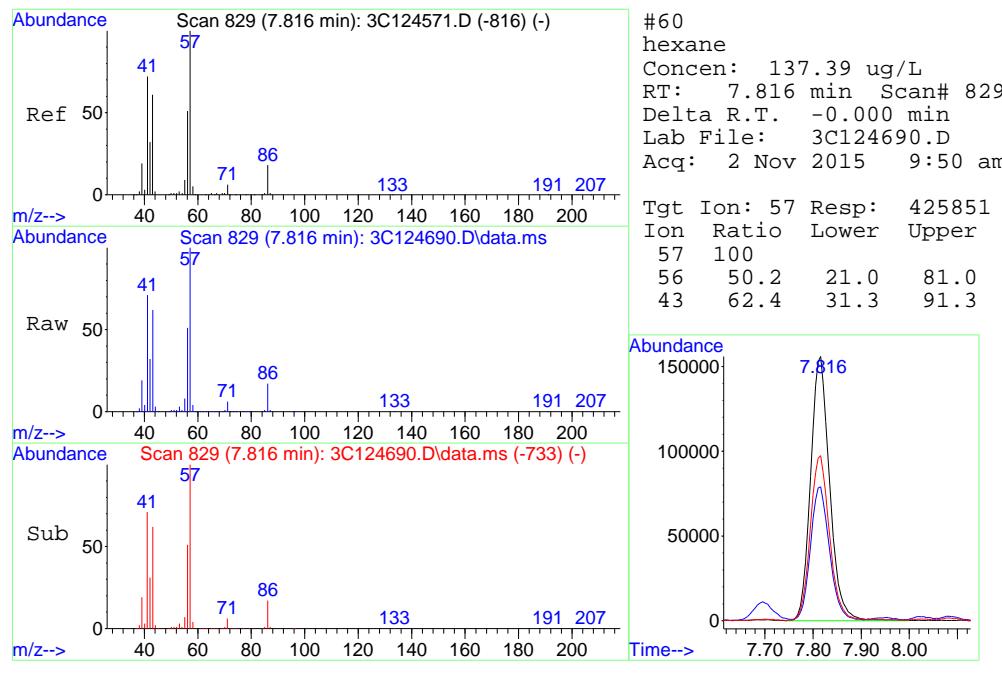
Quant Time: Nov 02 14:23:02 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

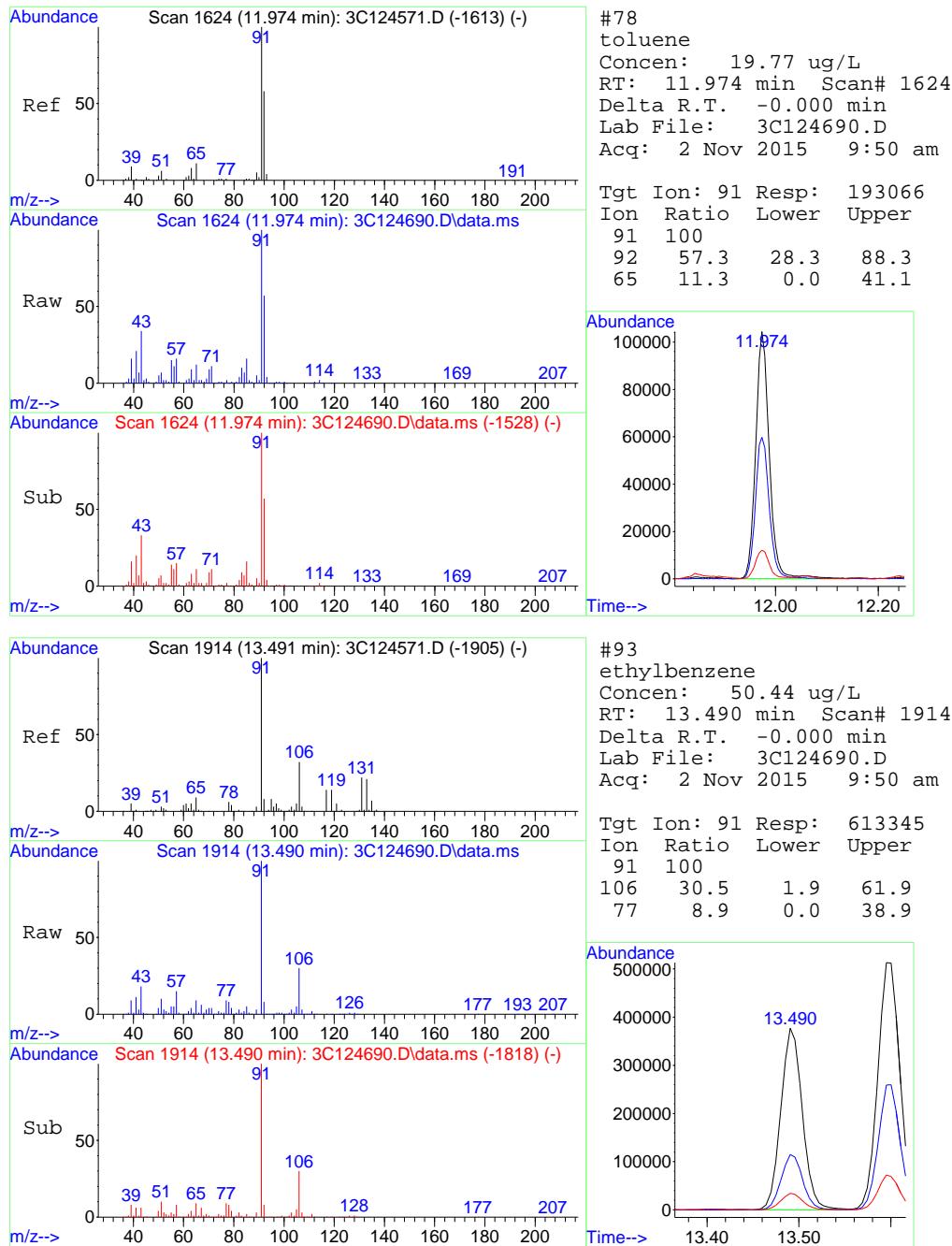


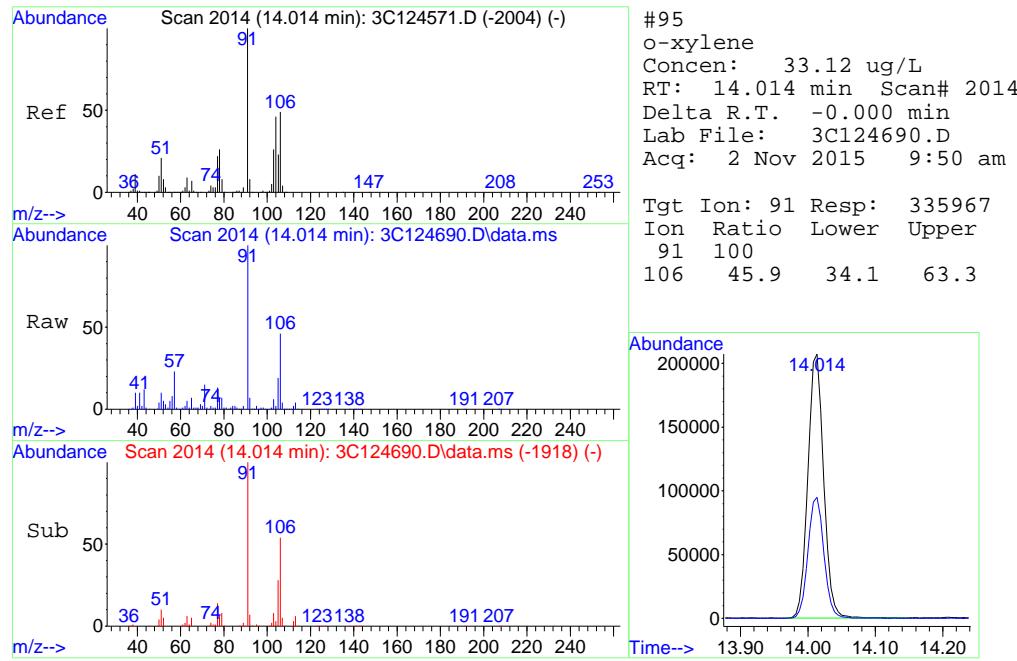
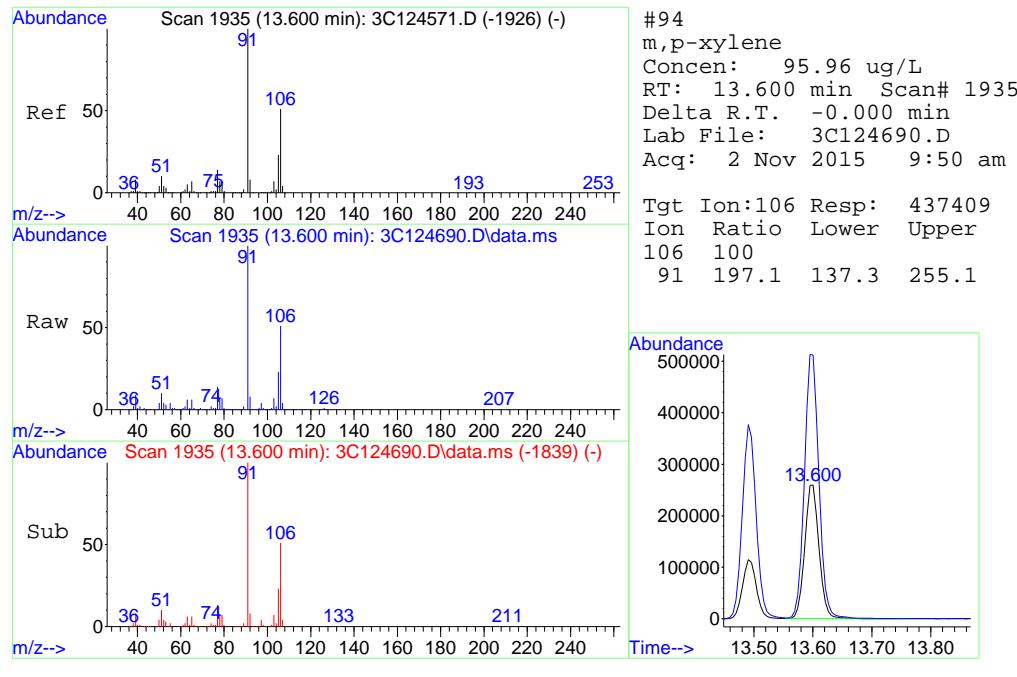
M3C5689.M Mon Nov 02 14:25:31 2015 T

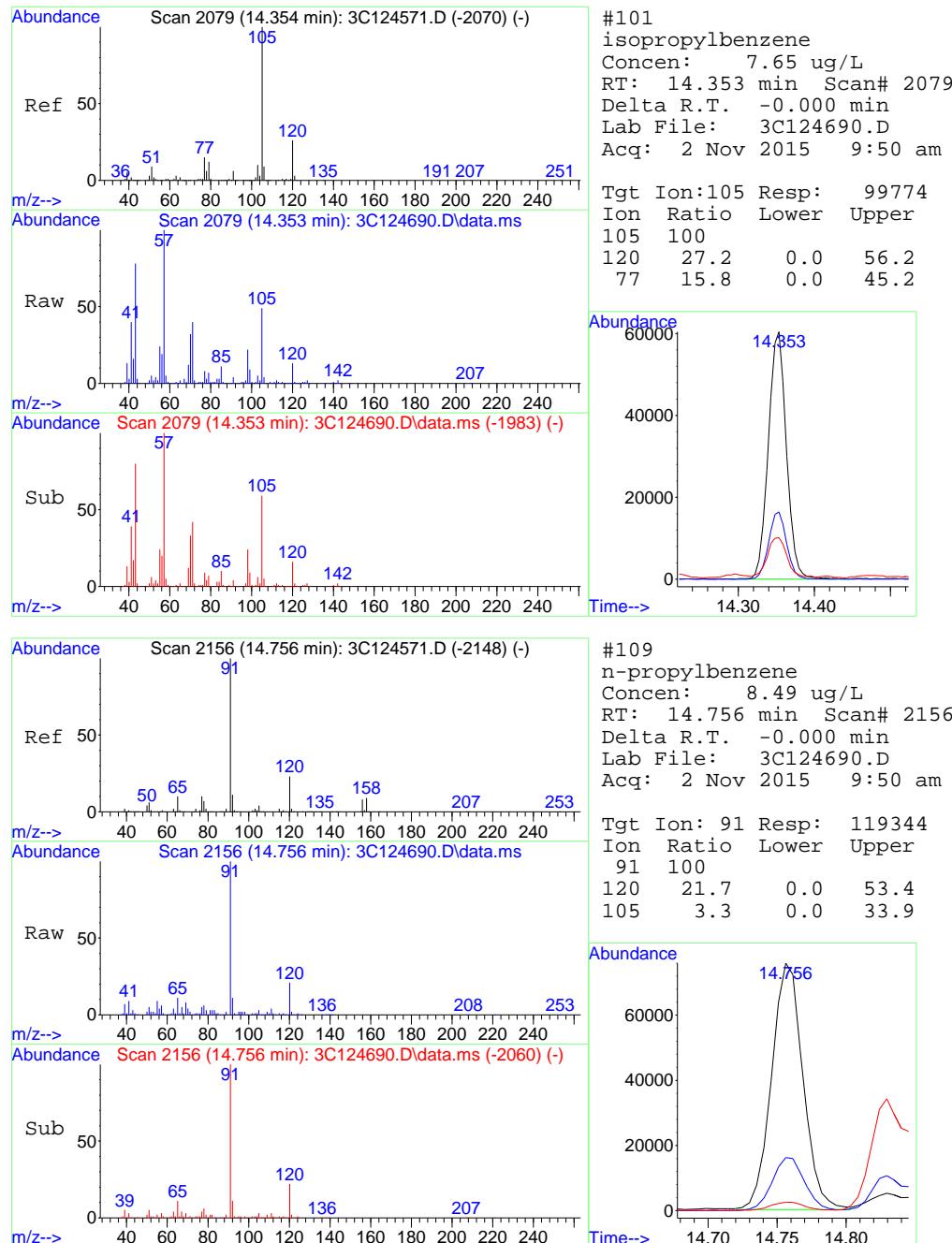
Page: 2

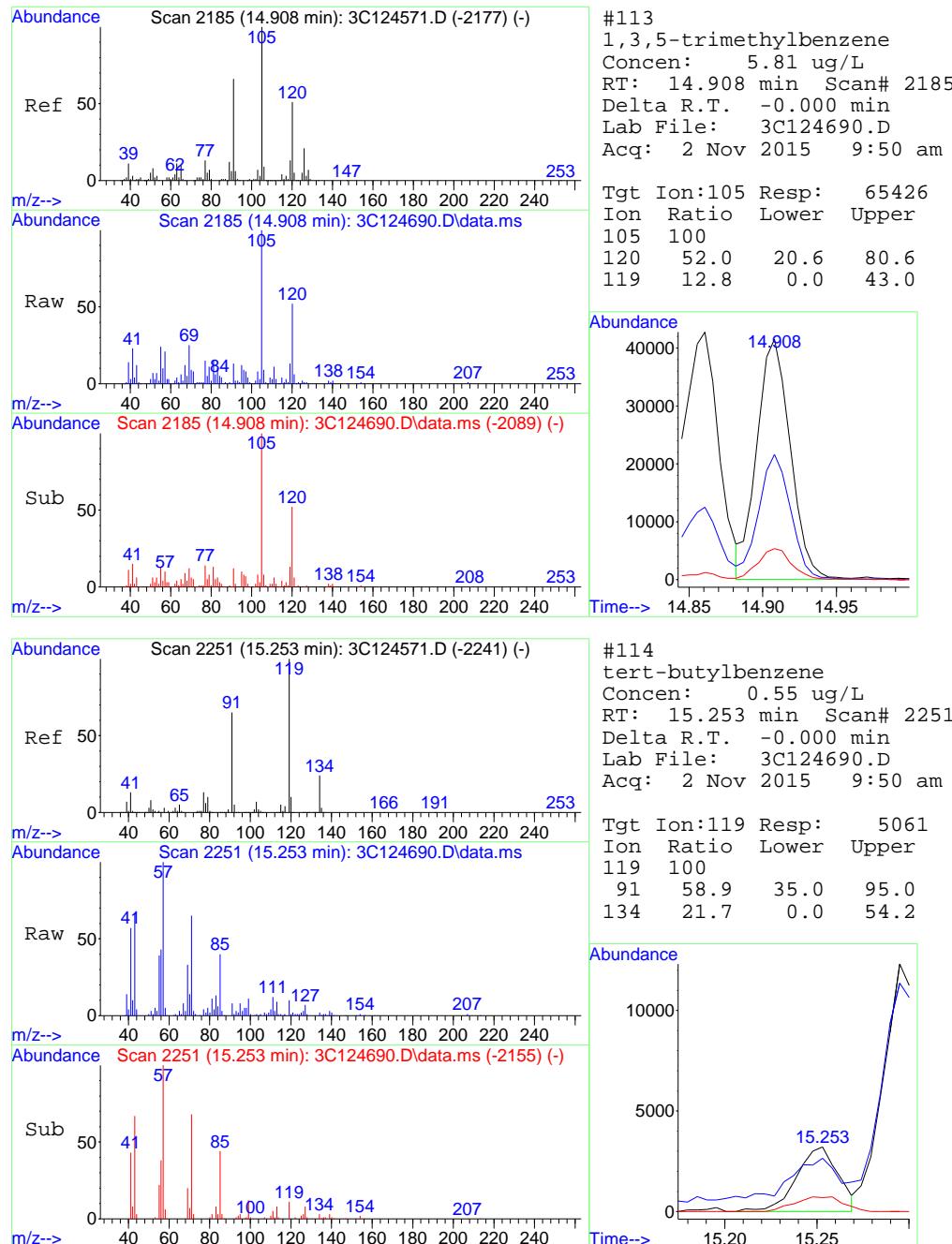


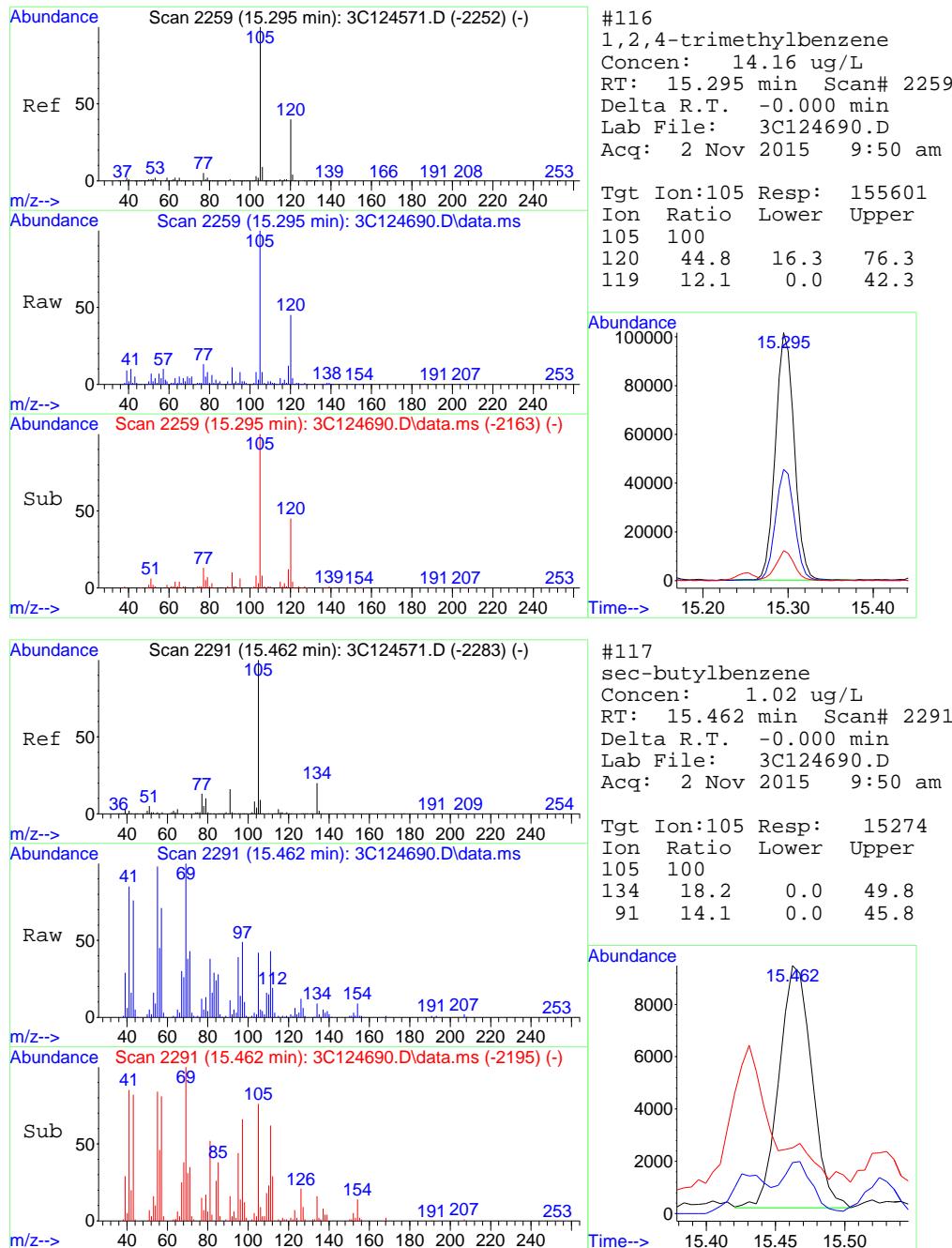


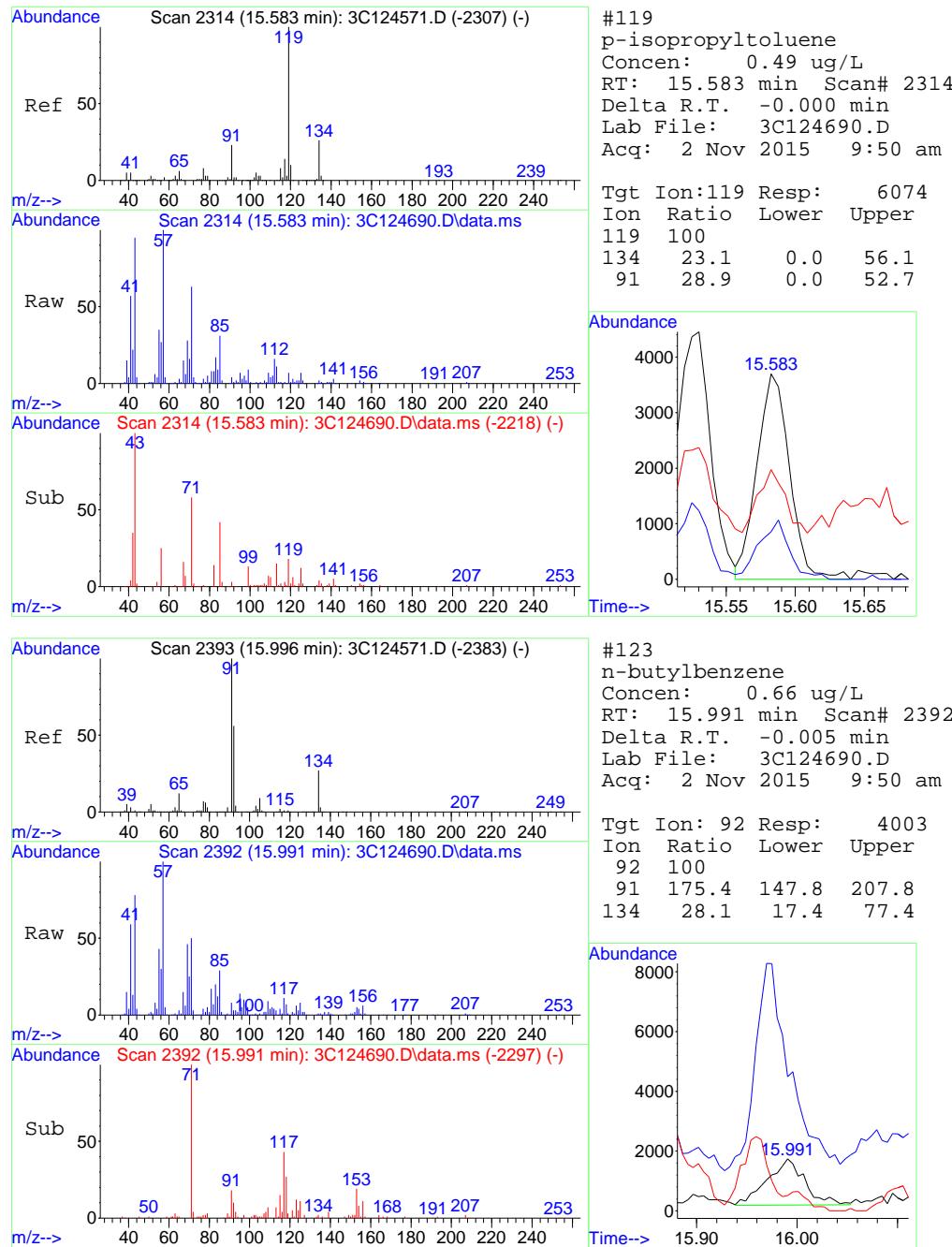


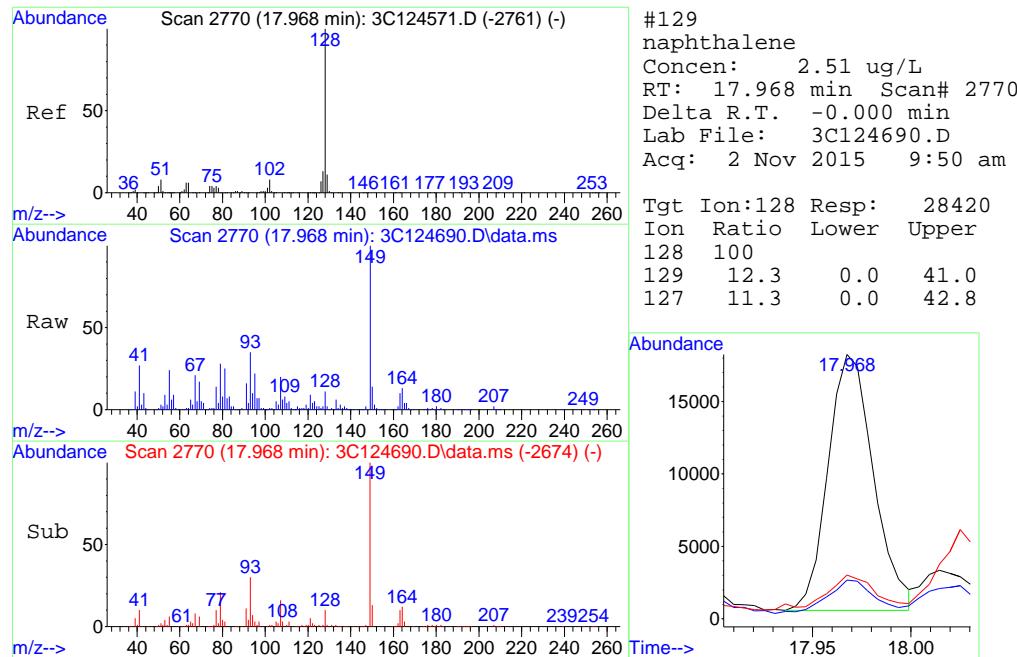












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5698-5699\  
 Data File : 3C124755.D  
 Acq On : 3 Nov 2015 5:11 pm  
 Operator : PrashanS  
 Sample : JC7097-2  
 Misc : MS93595,V3C5698,5.9,,,1  
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 04 13:16:54 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

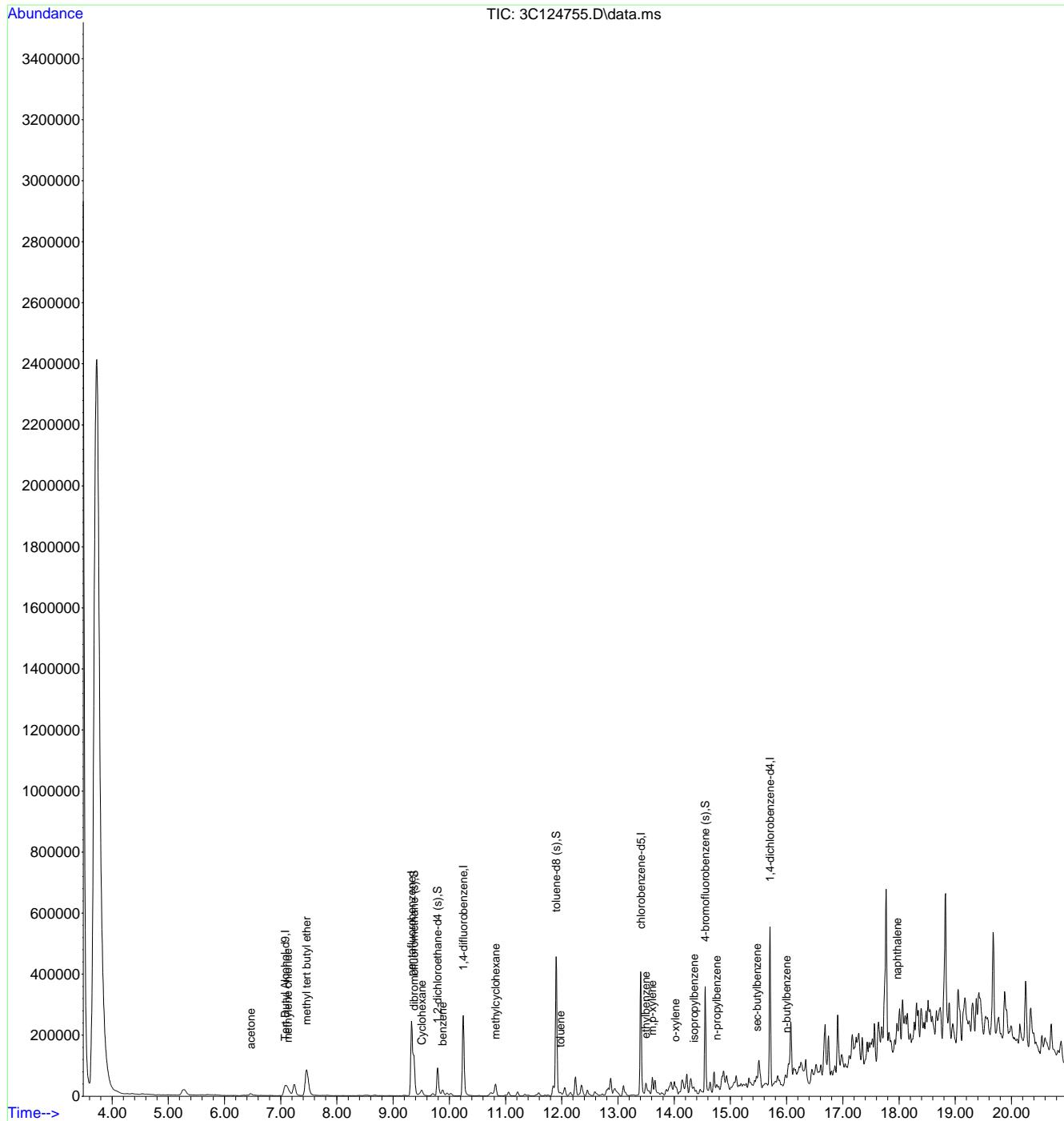
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
1) Tert Butyl Alcohol-d9	7.078	65	106257	500.00	ug/L	0.00
5) pentafluorobenzene	9.327	168	215788	50.00	ug/L	0.00
55) 1,4-difluorobenzene	10.248	114	260153	50.00	ug/L	0.00
84) chlorobenzene-d5	13.407	117	232082	50.00	ug/L	0.00
100) 1,4-dichlorobenzene-d4	15.703	152	125338	50.00	ug/L	0.00
<b>System Monitoring Compounds</b>						
46) dibromofluoromethane (s)	9.369	113	80484	52.32	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery =	104.64%		
47) 1,2-dichloroethane-d4 (s)	9.788	65	78237	51.98	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery =	103.96%		
76) toluene-d8 (s)	11.901	98	323095	51.41	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery =	102.82%		
102) 4-bromofluorobenzene (s)	14.552	95	119376	48.43	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery =	96.86%		
<b>Target Compounds</b>						
				Qvalue		
20) acetone	6.466	43	16520	40.07	ug/L	100
26) methylene chloride	7.125	84	1243	0.57	ug/L	94
28) methyl tert butyl ether	7.460	73	164225	24.87	ug/L	97
51) Cyclohexane	9.510	84	8910	2.13	ug/L #	42
61) benzene	9.876	78	11284	1.43	ug/L	97
72) methylcyclohexane	10.823	83	18712	4.54	ug/L	95
78) toluene	11.974	91	1884	0.23	ug/L	92
93) ethylbenzene	13.496	91	2794	0.27	ug/L	89
94) m,p-xylene	13.606	106	1673	0.44	ug/L	93
95) o-xylene	14.019	91	5402	0.63	ug/L	87
101) isopropylbenzene	14.354	105	10688	0.98	ug/L	95
109) n-propylbenzene	14.756	91	16280	1.39	ug/L	100
117) sec-butylbenzene	15.468	105	12245	0.98	ug/L	95
123) n-butylbenzene	15.996	92	3349	0.66	ug/L	87
129) naphthalene	17.968	128	4696	0.50	ug/L	92

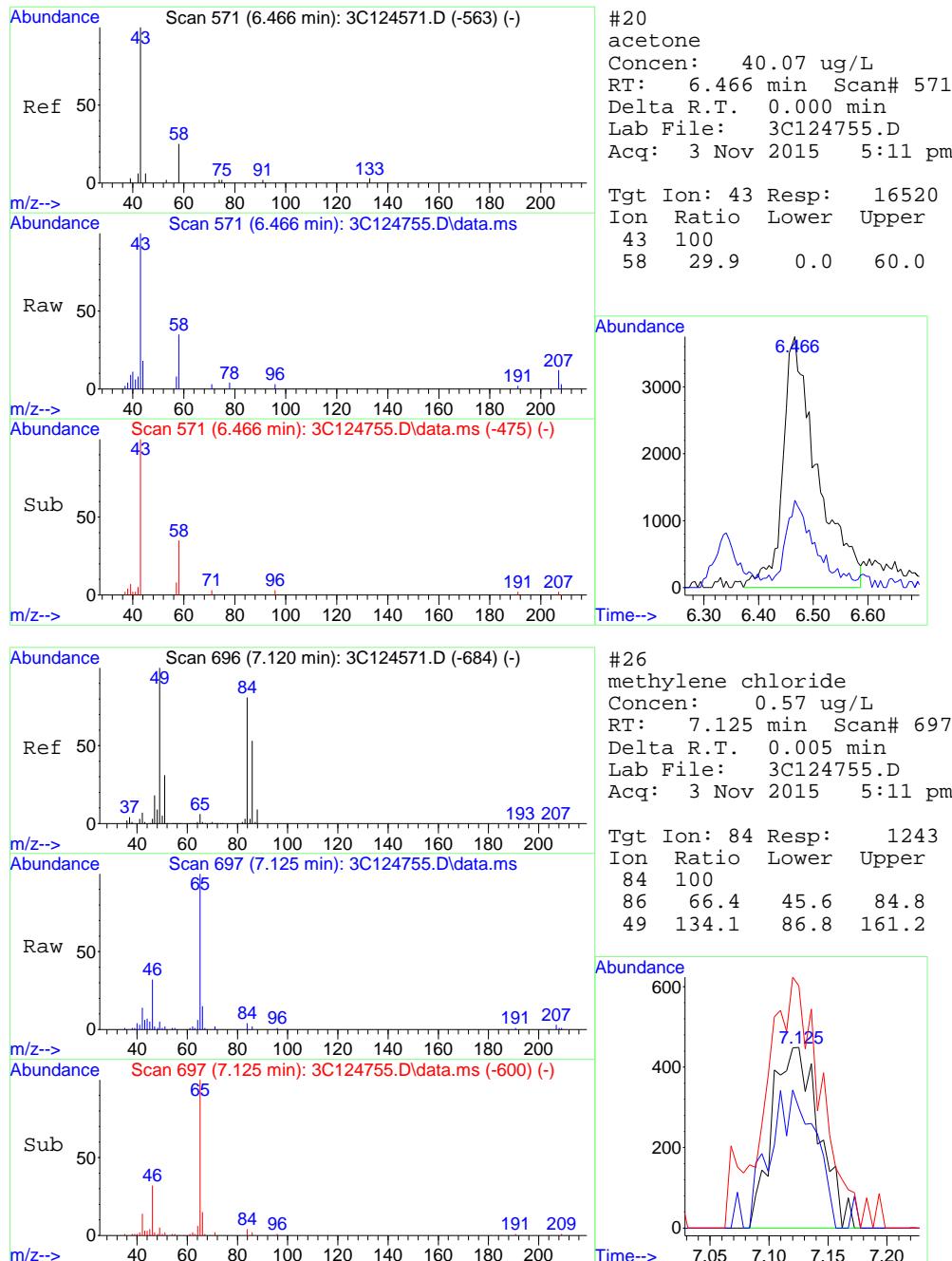
(#) = qualifier out of range (m) = manual integration (+) = signals summed

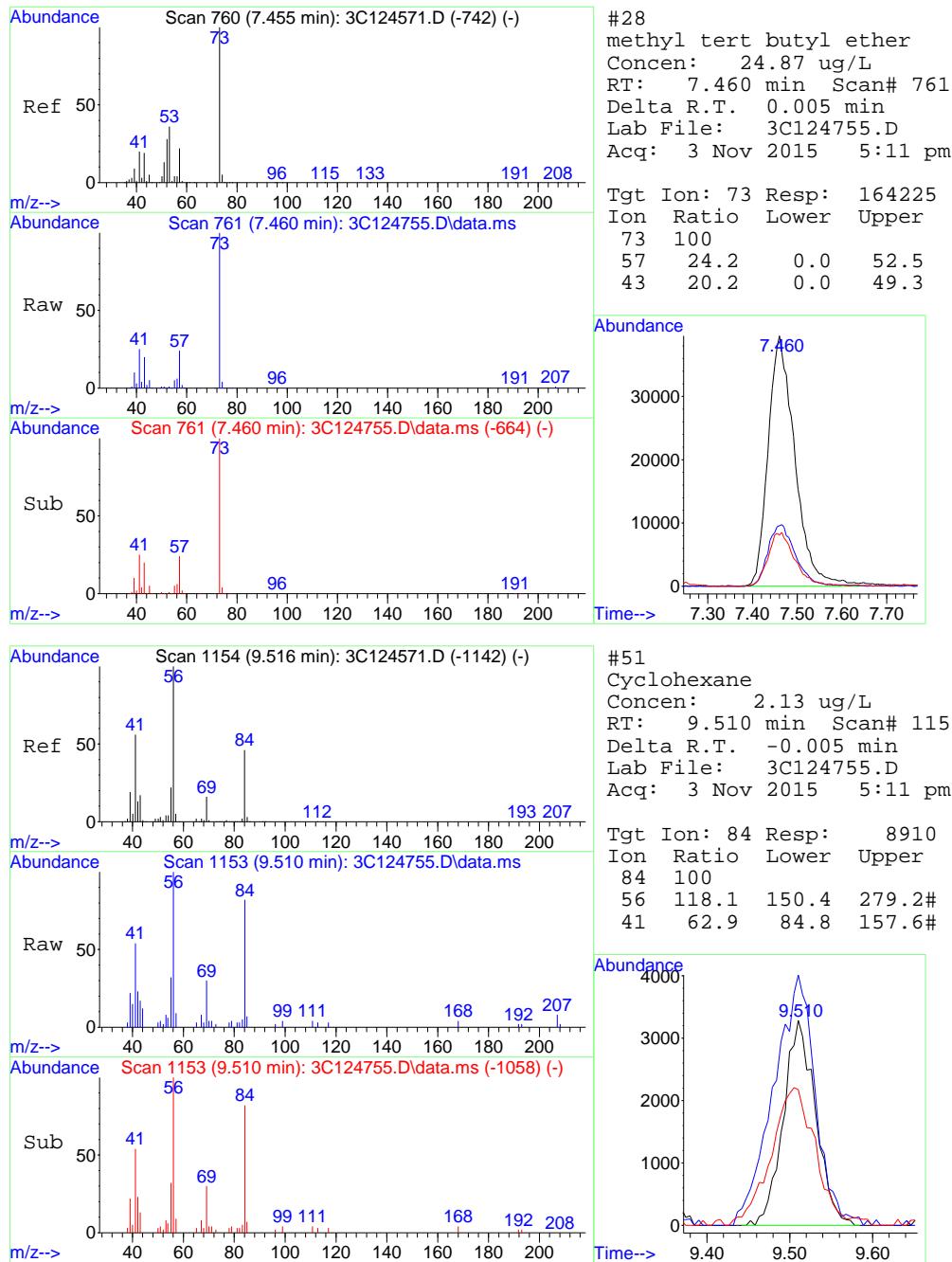
## Quantitation Report (QT Reviewed)

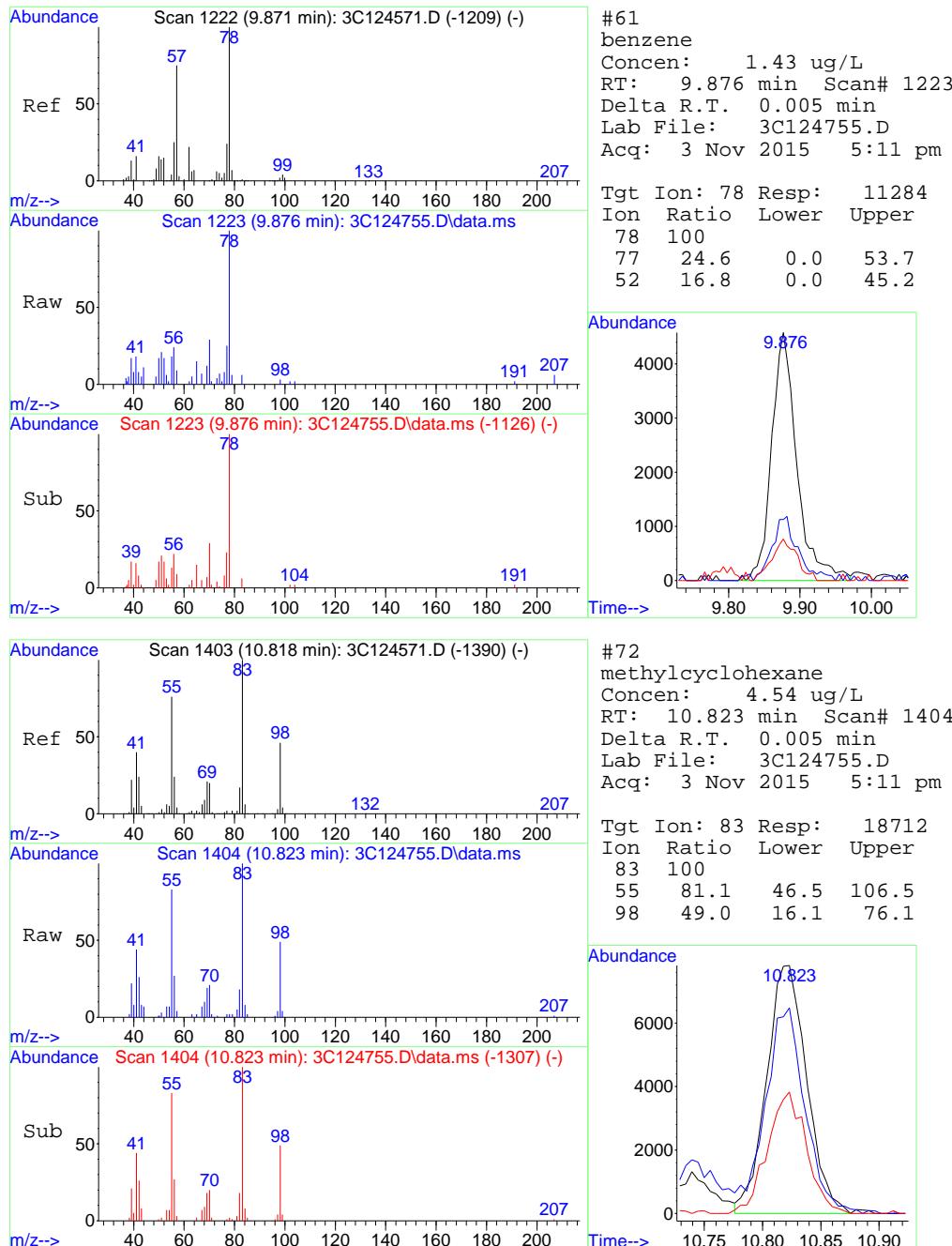
Data Path : C:\msdchem\1\DATA\3C\v3c5698-5699\  
 Data File : 3C124755.D  
 Acq On : 3 Nov 2015 5:11 pm  
 Operator : PrashanS  
 Sample : JC7097-2  
 Misc : MS93595,V3C5698,5.9,,,1  
 ALS Vial : 12 Sample Multiplier: 1

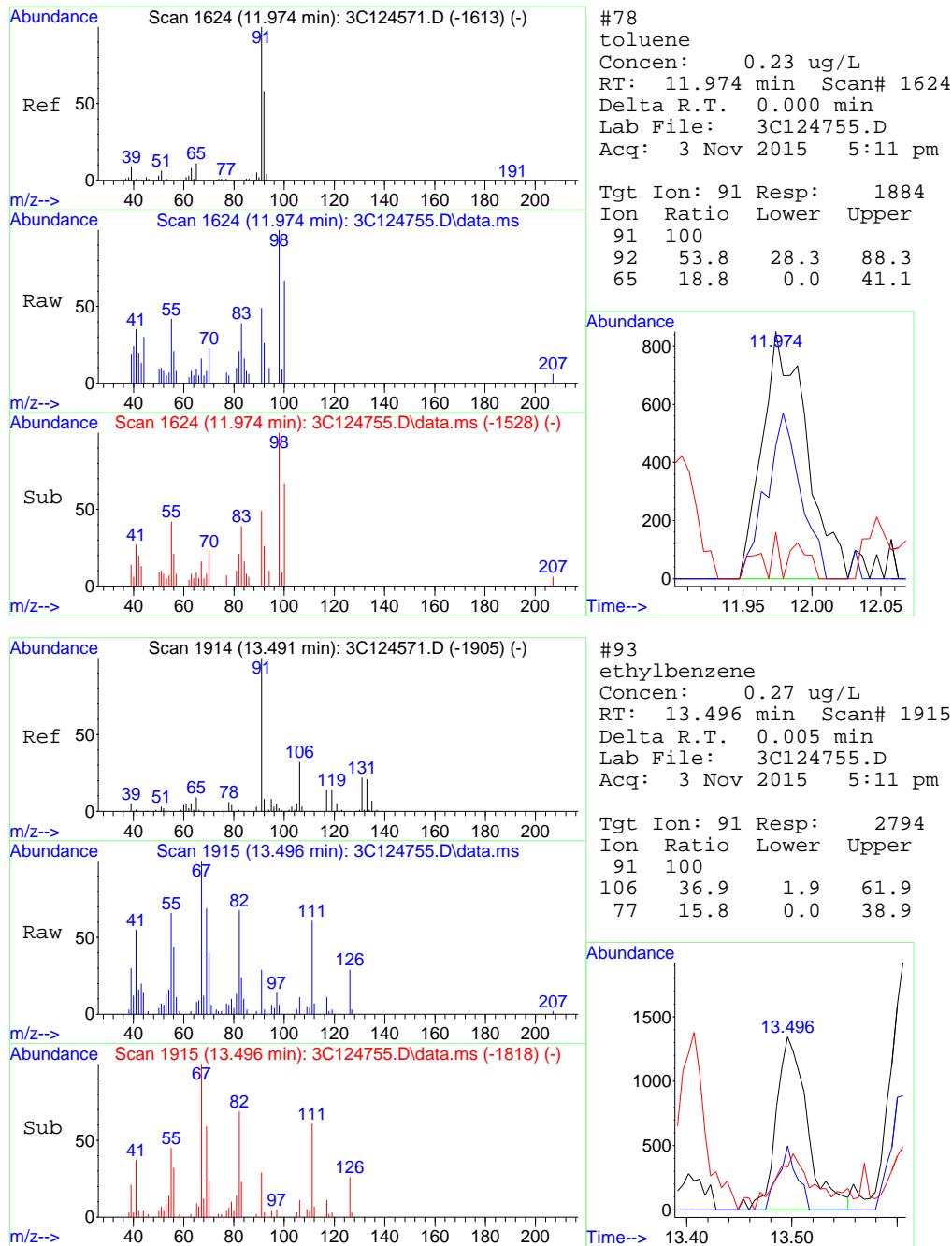
Quant Time: Nov 04 13:16:54 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

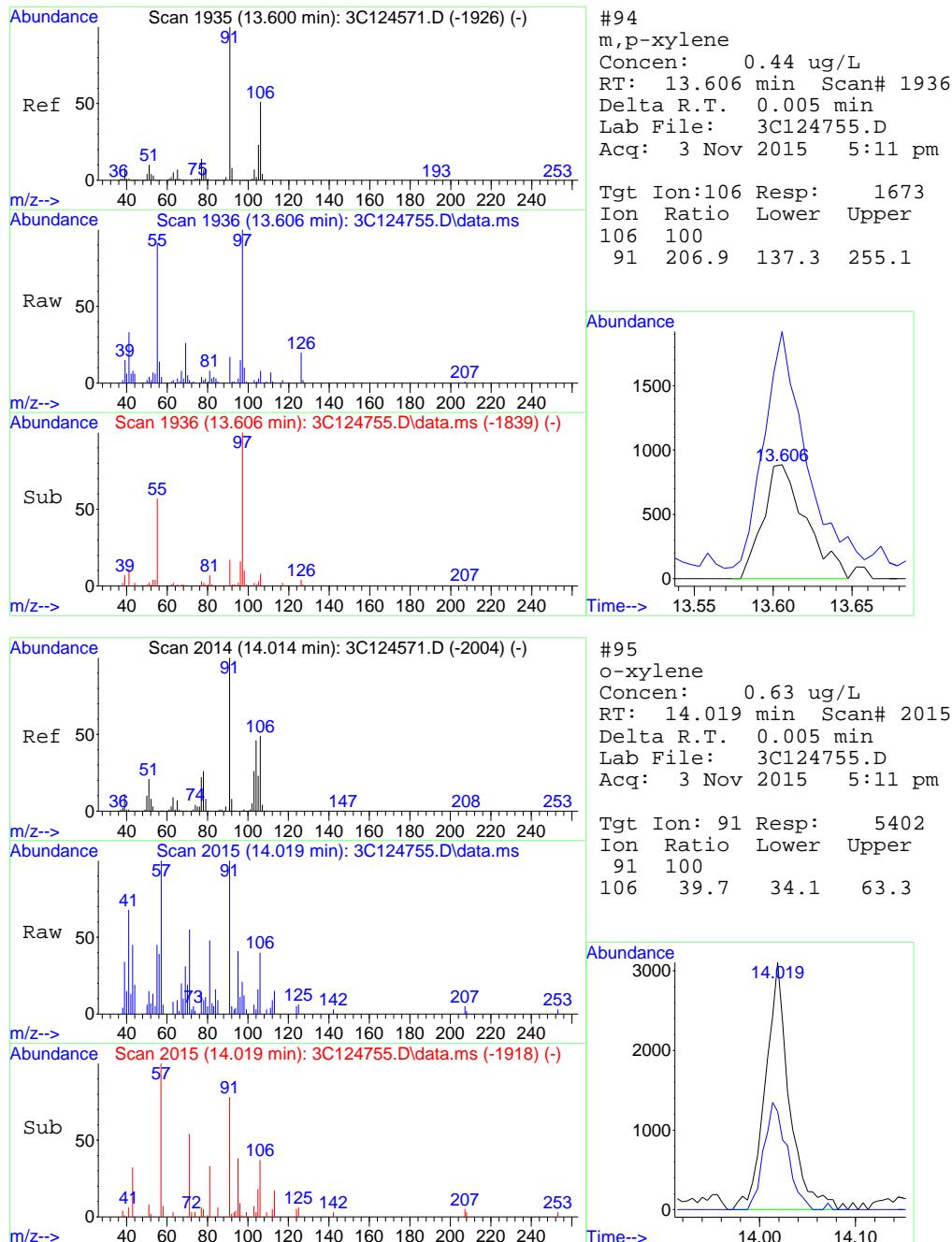


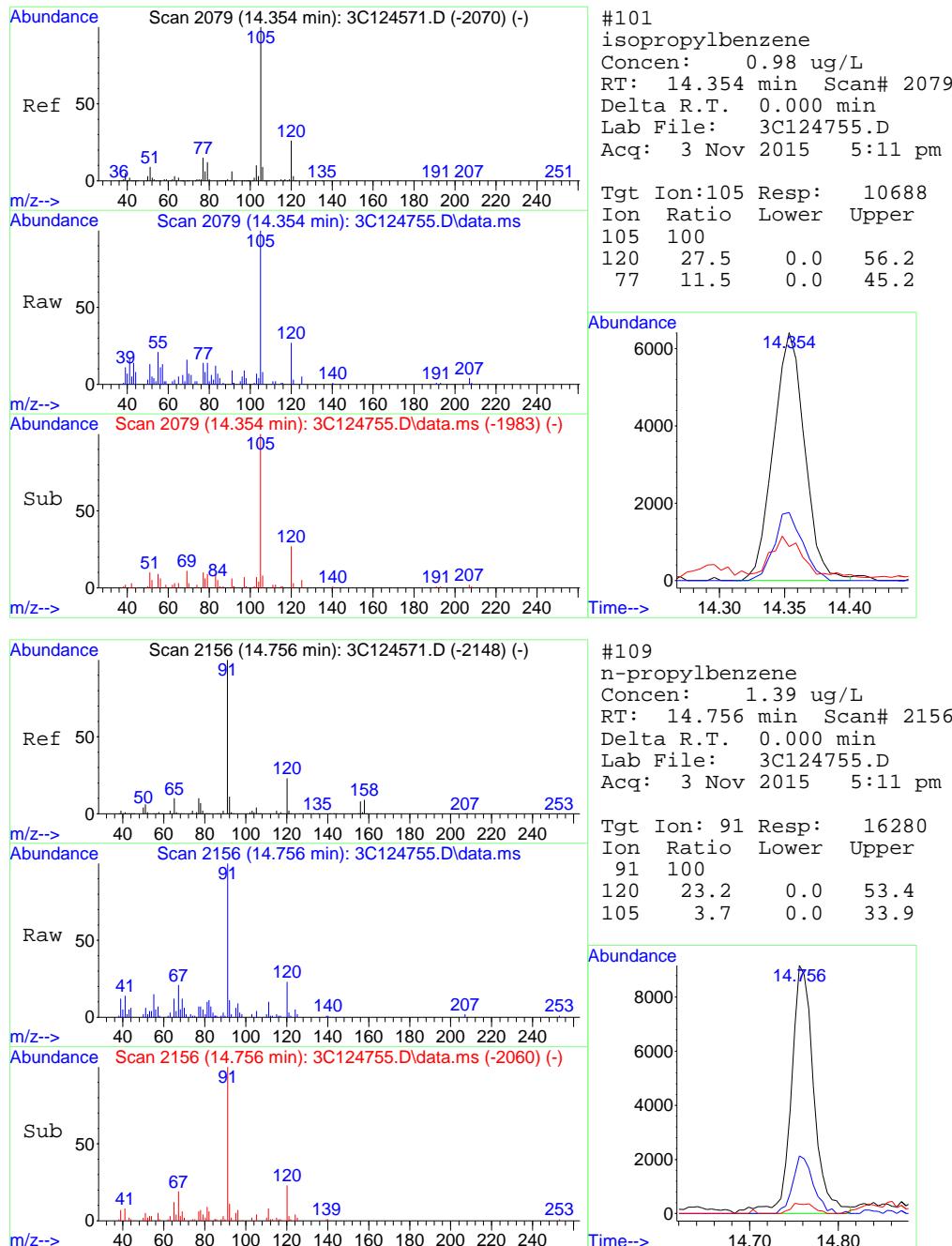


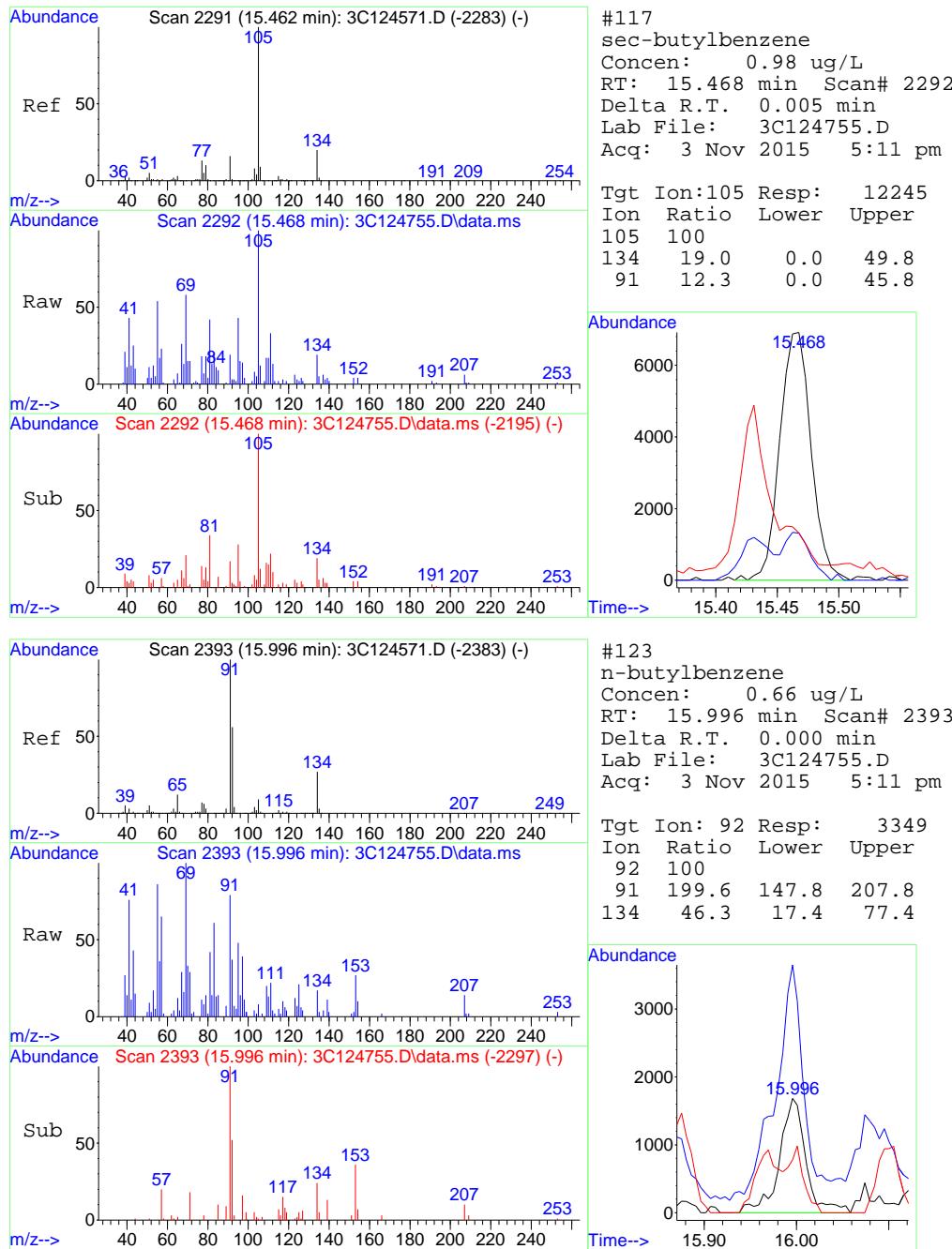


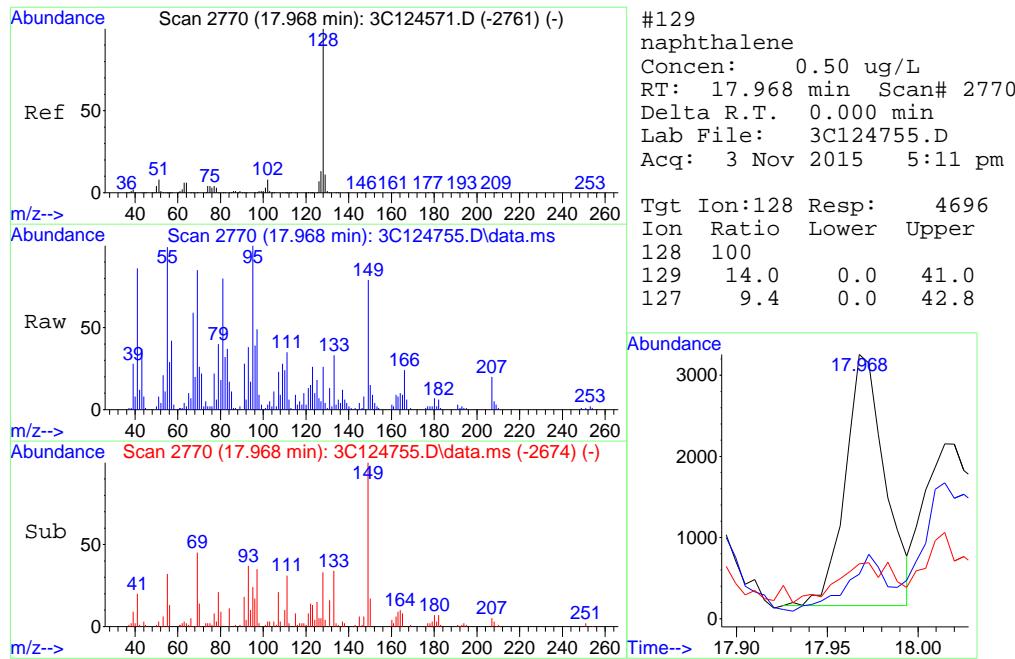












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5693-5694\  
 Data File : 3C124692.D  
 Acq On : 2 Nov 2015 10:45 am  
 Operator : PrashanS  
 Sample : JC7097-3  
 Misc : MS93595,V3C5694,6.9,,,1  
 ALS Vial : 49 Sample Multiplier: 1

Quant Time: Nov 02 14:38:10 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

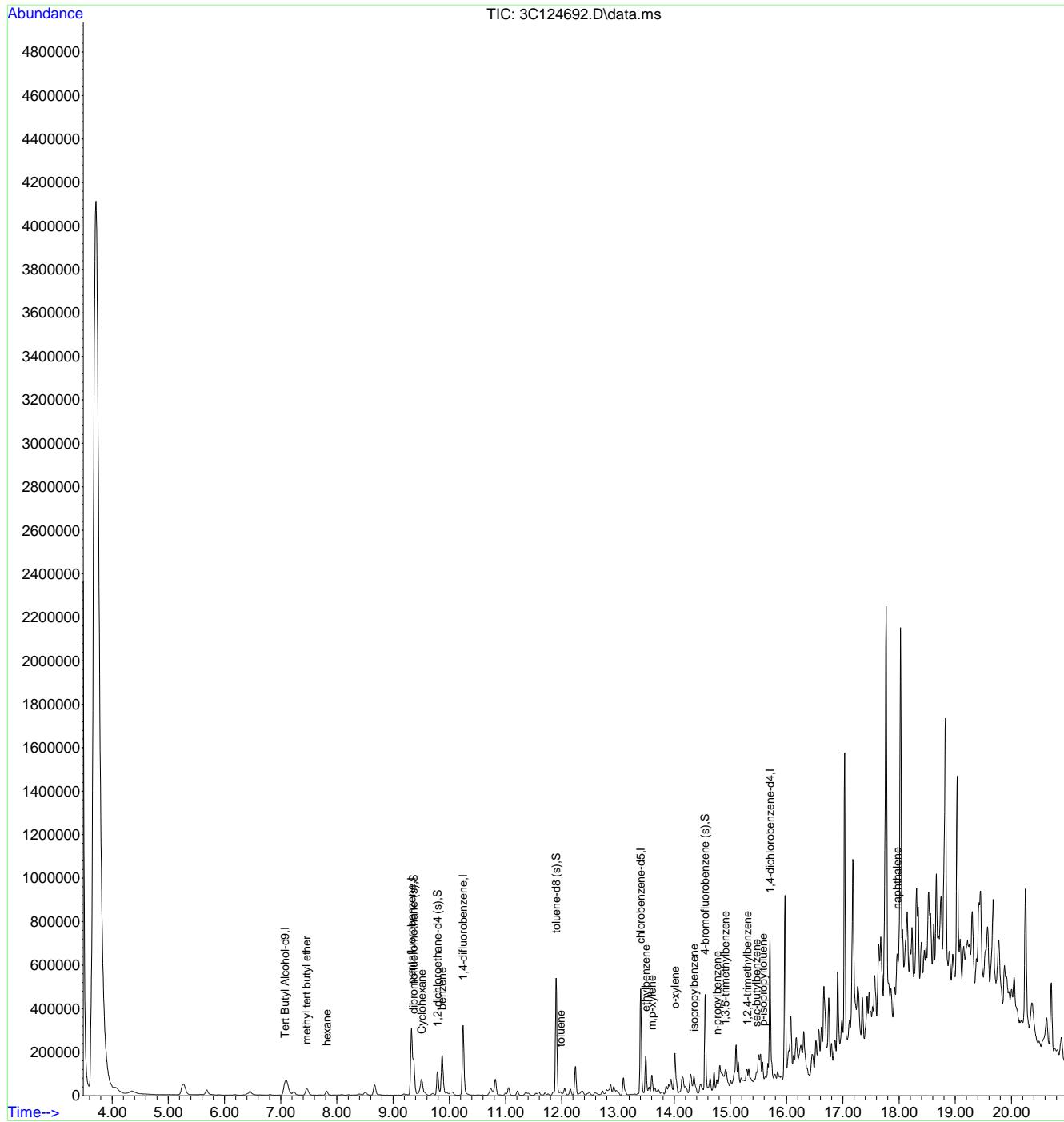
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) Tert Butyl Alcohol-d9	7.073	65	104616	500.00	ug/L	0.00
5) pentafluorobenzene	9.327	168	266739	50.00	ug/L	0.00
55) 1,4-difluorobenzene	10.242	114	315960	50.00	ug/L	0.00
84) chlorobenzene-d5	13.402	117	282580	50.00	ug/L	0.00
100) 1,4-dichlorobenzene-d4	15.703	152	163443	50.00	ug/L	0.00
<hr/>						
System Monitoring Compounds						
46) dibromofluoromethane (s)	9.364	113	93910	49.39	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery =	98.78%		
47) 1,2-dichloroethane-d4 (s)	9.787	65	93367	50.18	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery =	100.36%		
76) toluene-d8 (s)	11.900	98	388429	50.89	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery =	101.78%		
102) 4-bromofluorobenzene (s)	14.547	95	150293	46.76	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery =	93.52%		
<hr/>						
Target Compounds						
				Qvalue		
28) methyl tert butyl ether	7.460	73	9960	1.22	ug/L	# 1
51) Cyclohexane	9.510	84	40609	7.84	ug/L	# 43
60) hexane	7.821	57	13421	4.26	ug/L	96
61) benzene	9.871	78	154824	16.17	ug/L	99
78) toluene	11.979	91	4858	0.49	ug/L	100
93) ethylbenzene	13.490	91	108651	8.70	ug/L	96
94) m,p-xylene	13.600	106	21530	4.60	ug/L	98
95) o-xylene	14.013	91	92648	8.89	ug/L	98
101) isopropylbenzene	14.353	105	30119	2.12	ug/L	99
109) n-propylbenzene	14.761	91	37093	2.42	ug/L	99
113) 1,3,5-trimethylbenzene	14.908	105	17564	1.43	ug/L	94
116) 1,2,4-trimethylbenzene	15.300	105	36582	3.06	ug/L	97
117) sec-butylbenzene	15.462	105	8618	0.53	ug/L	91
119) p-isopropyltoluene	15.583	119	4446	0.33	ug/L	96
129) naphthalene	17.968	128	22011	1.79	ug/L	97
<hr/>						

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

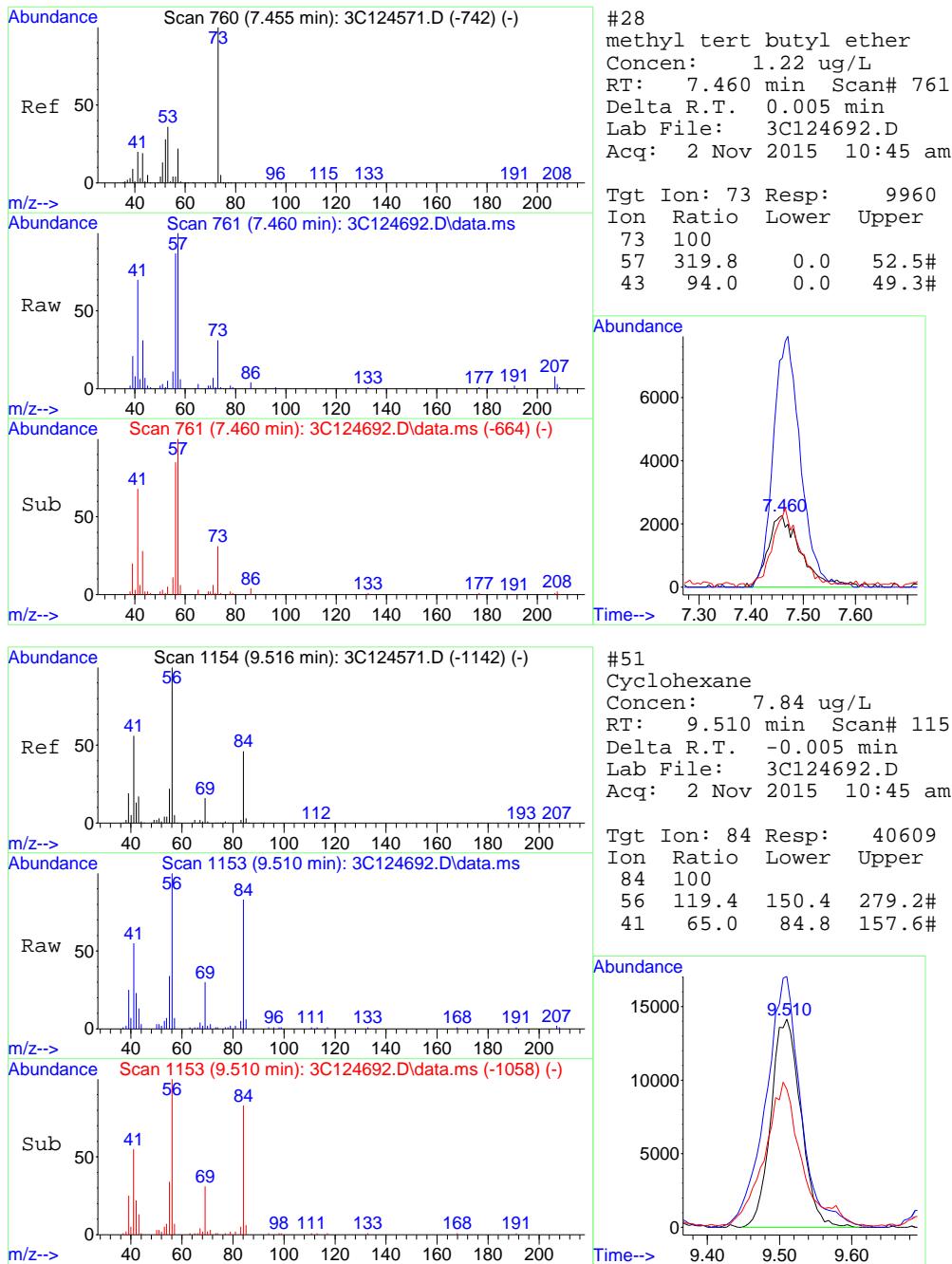
Data Path : C:\msdchem\1\DATA\3C\v3c5693-5694\  
 Data File : 3C124692.D  
 Acq On : 2 Nov 2015 10:45 am  
 Operator : PrashanS  
 Sample : JC7097-3  
 Misc : MS93595,V3C5694,6.9,,,1  
 ALS Vial : 49 Sample Multiplier: 1

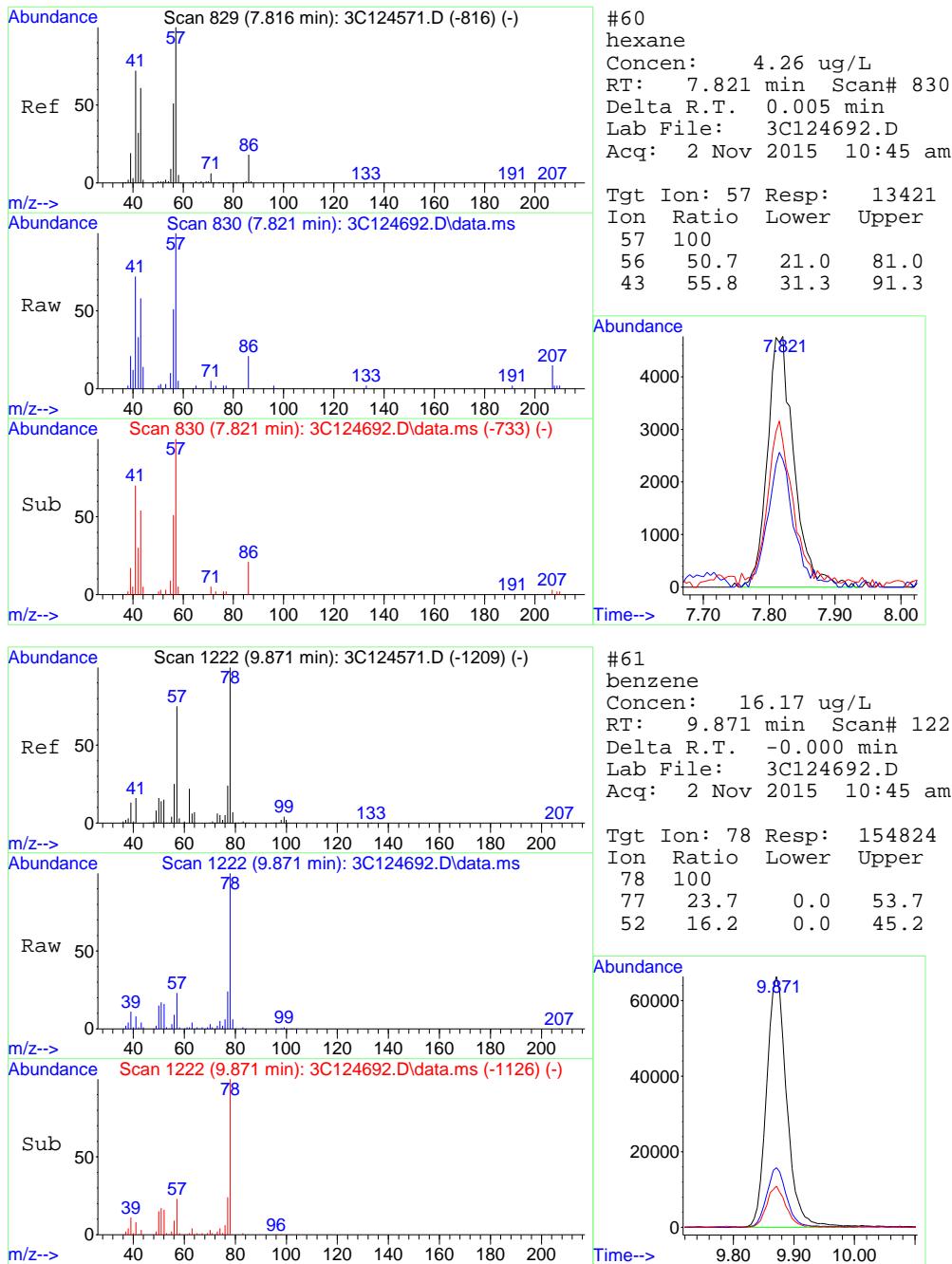
Quant Time: Nov 02 14:38:10 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

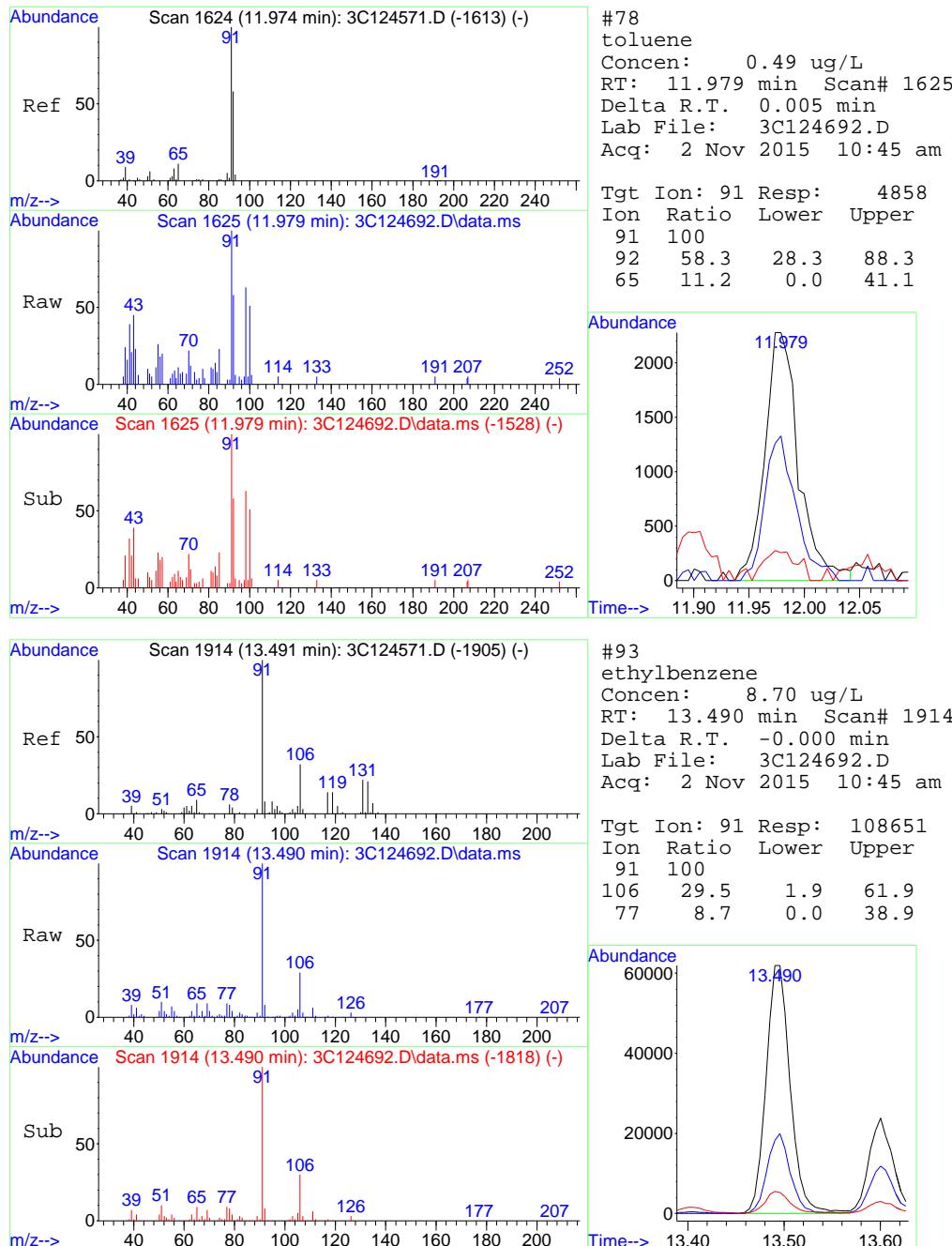


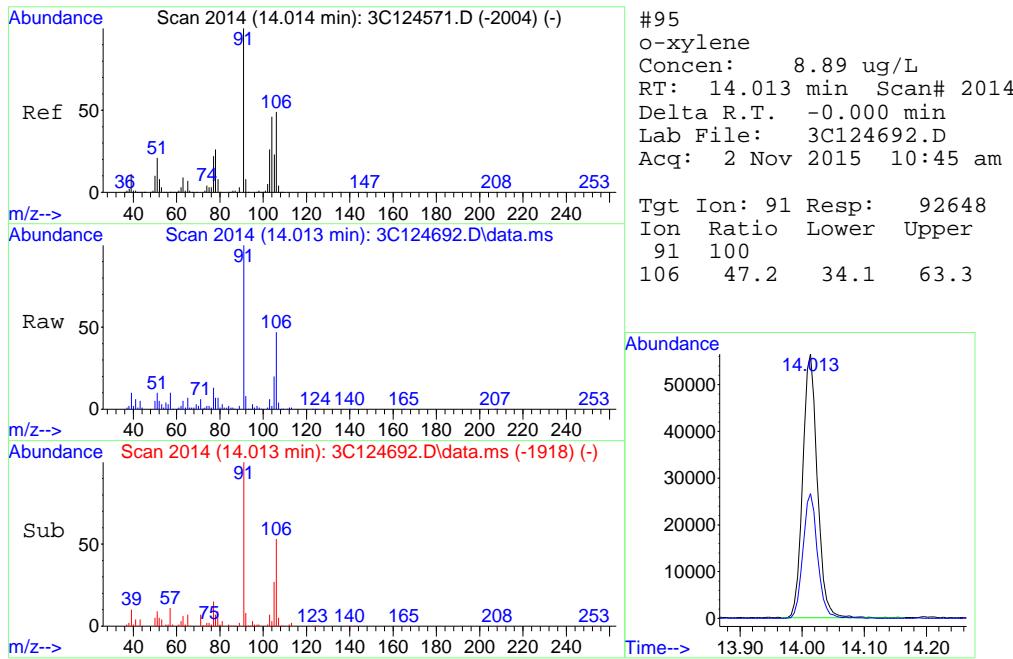
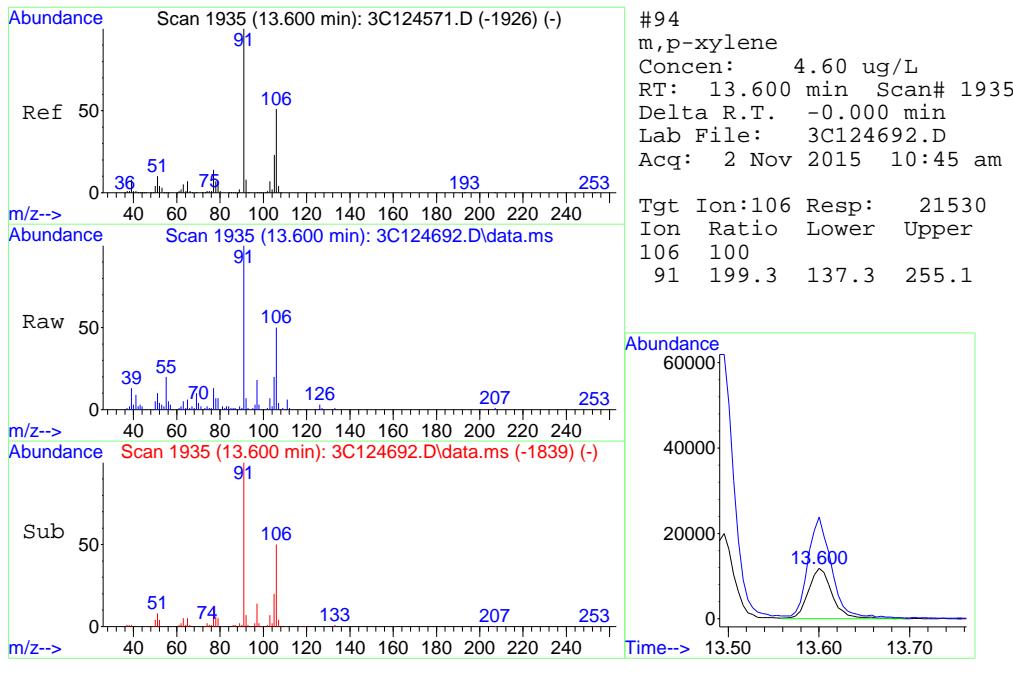
M3C5689.M Mon Nov 02 14:38:18 2015 T

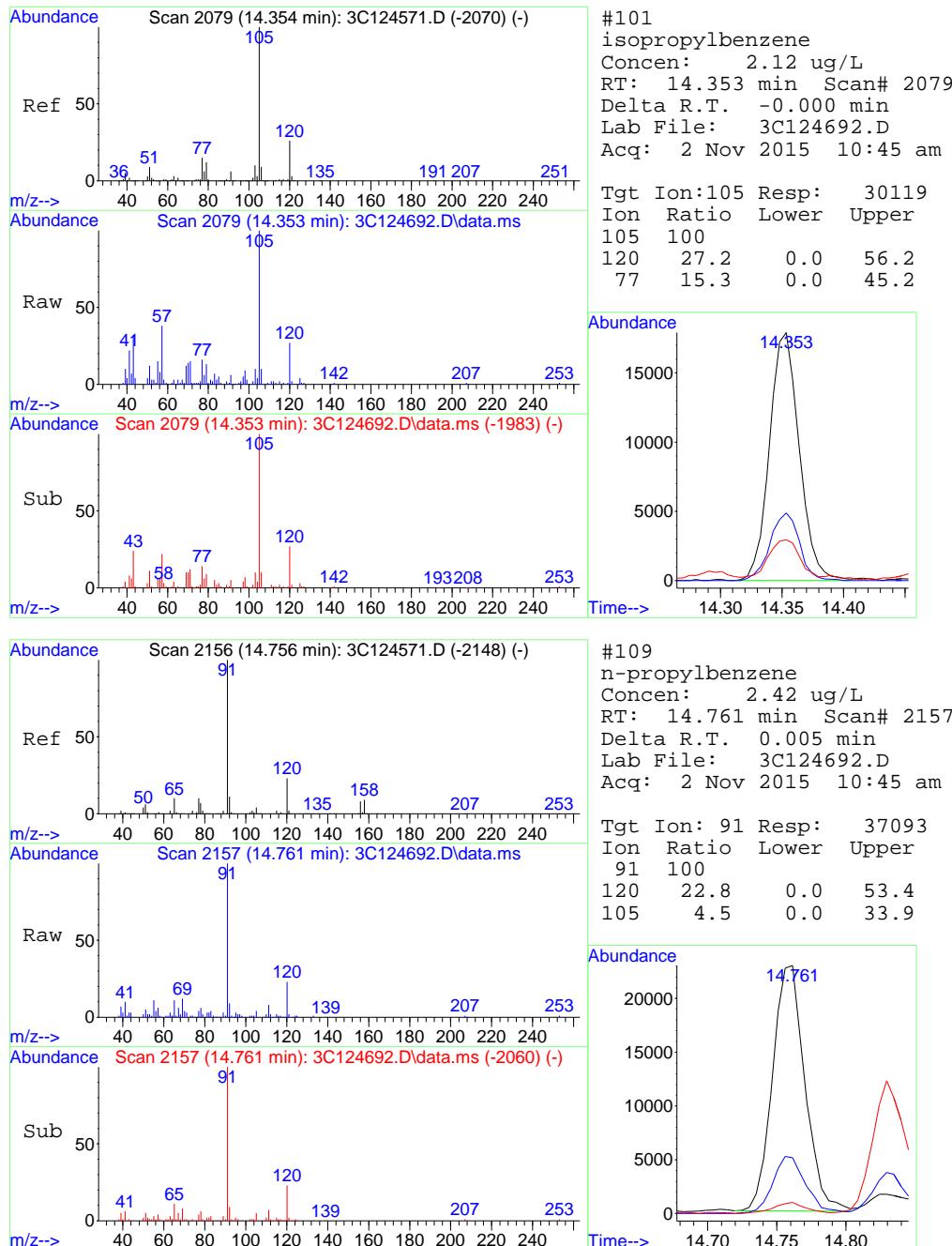
Page: 2

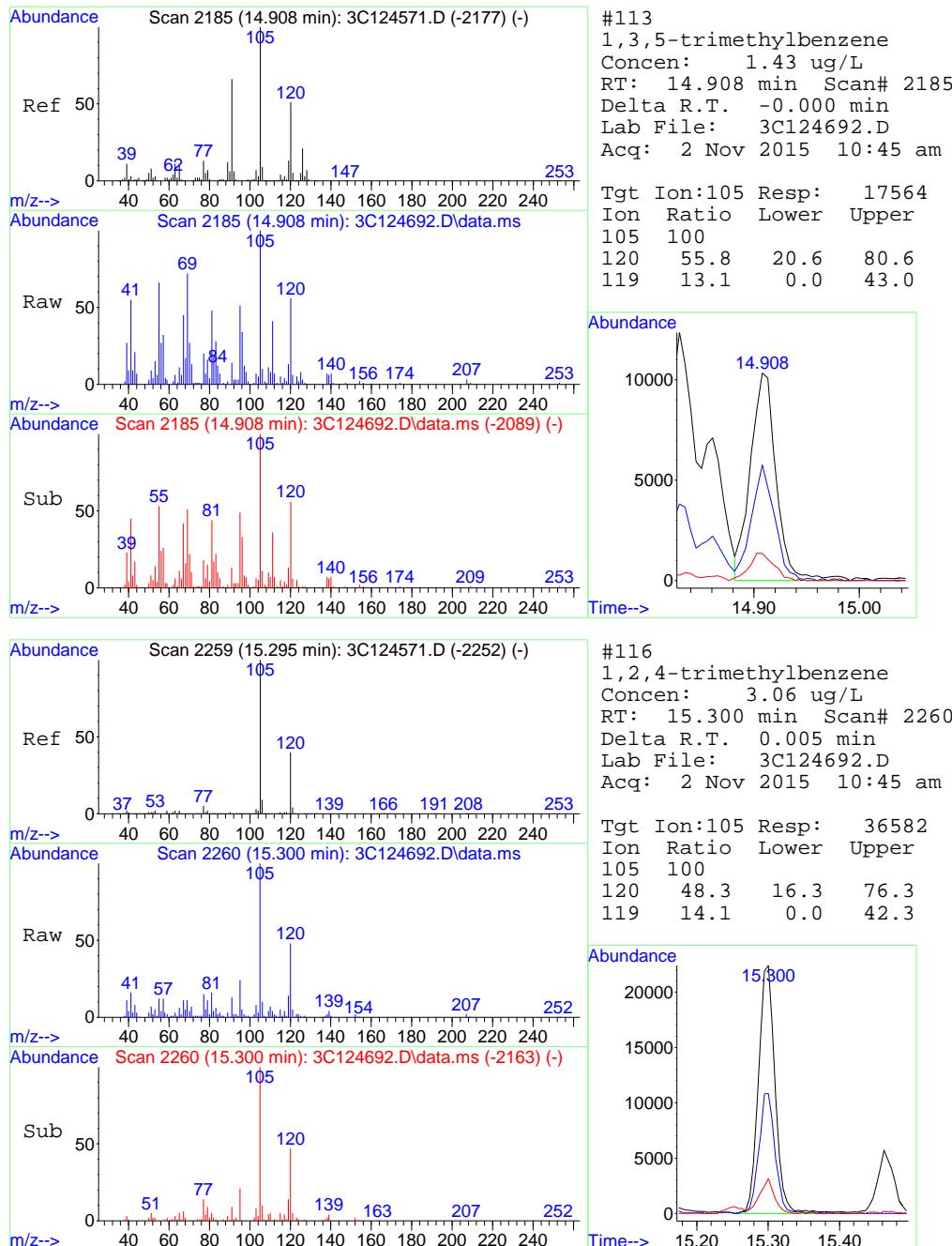


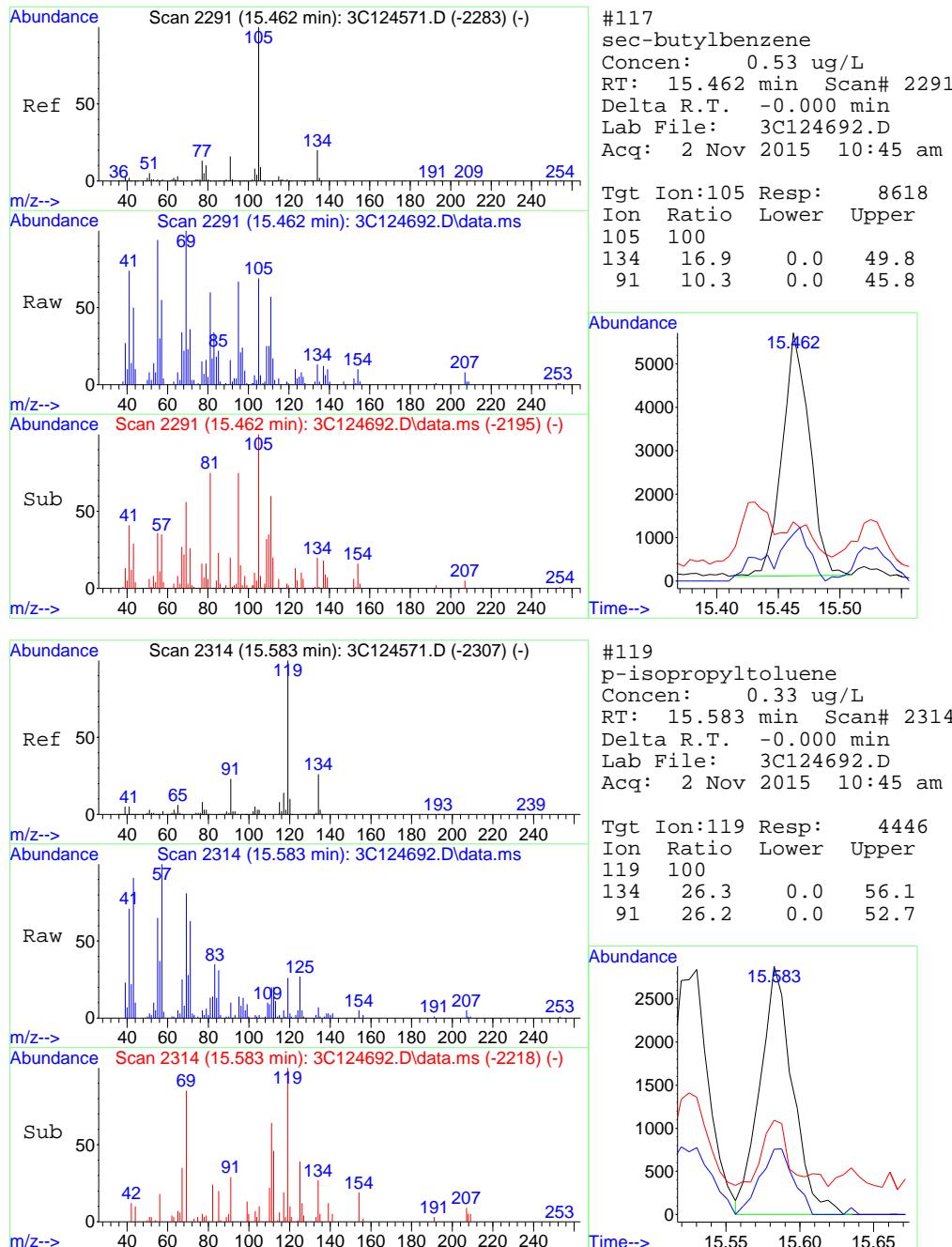


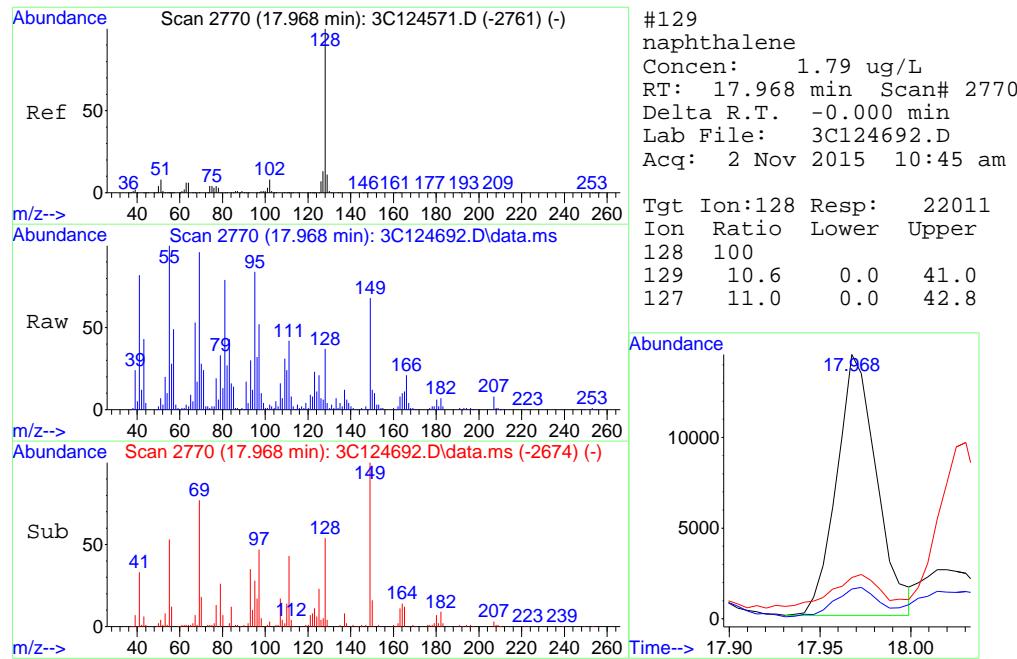












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5698-5699\  
 Data File : 3C124768.D  
 Acq On : 3 Nov 2015 11:11 pm  
 Operator : PrashanS  
 Sample : JC7097-4  
 Misc : MS93595,V3C5698,6.4,,,1  
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Nov 04 13:20:53 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

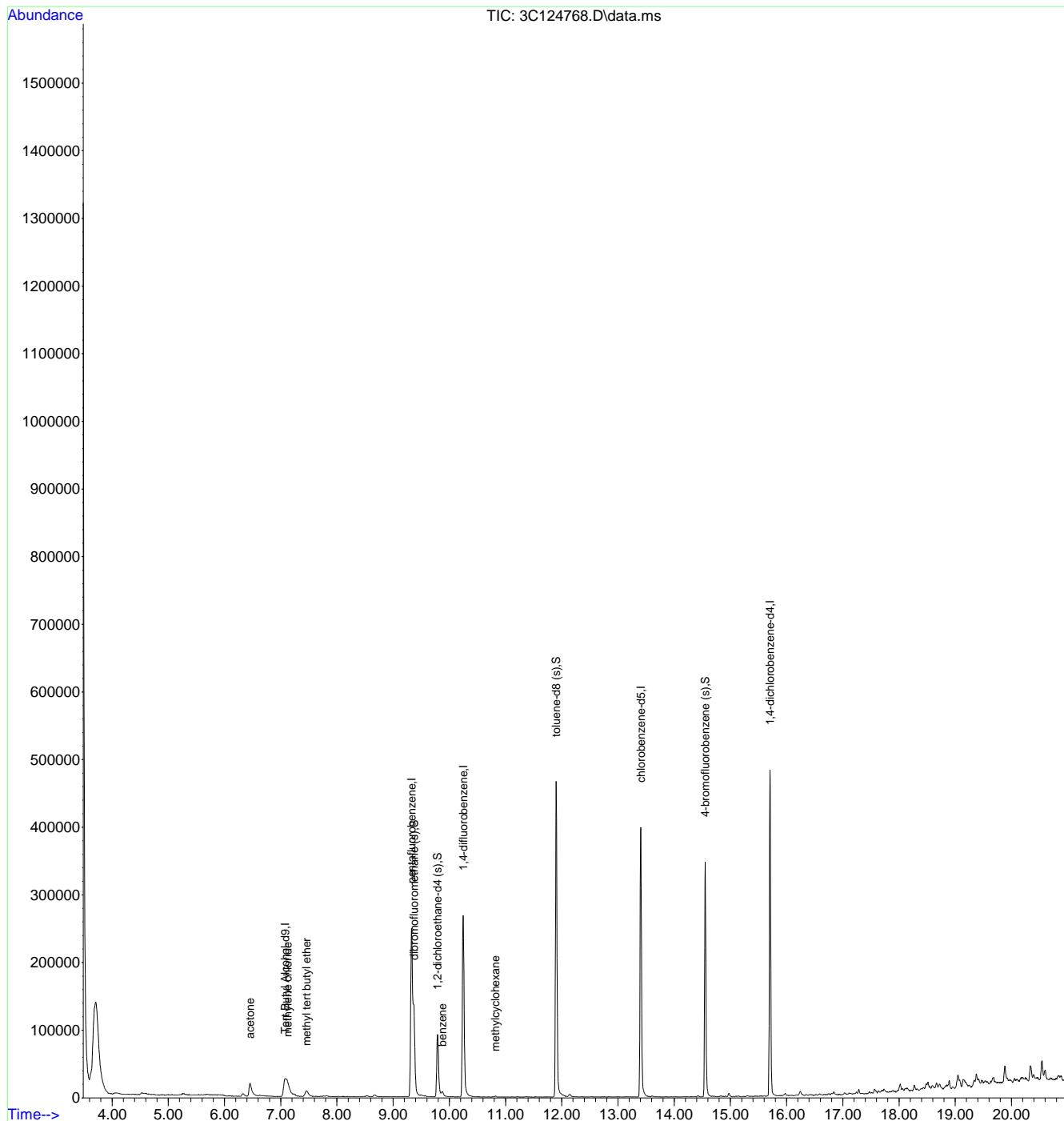
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
1) Tert Butyl Alcohol-d9	7.078	65	93088	500.00	ug/L	0.00
5) pentafluorobenzene	9.327	168	219333	50.00	ug/L	0.00
55) 1,4-difluorobenzene	10.248	114	272199	50.00	ug/L	0.00
84) chlorobenzene-d5	13.407	117	234224	50.00	ug/L	0.00
100) 1,4-dichlorobenzene-d4	15.703	152	121944	50.00	ug/L	0.00
<b>System Monitoring Compounds</b>						
46) dibromofluoromethane (s)	9.369	113	83384	53.33	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery =	106.66%		
47) 1,2-dichloroethane-d4 (s)	9.788	65	80862	52.85	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery =	105.70%		
76) toluene-d8 (s)	11.901	98	328175	49.90	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery =	99.80%		
102) 4-bromofluorobenzene (s)	14.552	95	118274	49.32	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery =	98.64%		
<b>Target Compounds</b>						
				Qvalue		
20) acetone	6.456	43	46762	111.60	ug/L	93
26) methylene chloride	7.120	84	1083	0.49	ug/L	89
28) methyl tert butyl ether	7.460	73	14912	2.22	ug/L	90
61) benzene	9.871	78	5335	0.65	ug/L	97
72) methylcyclohexane	10.818	83	733	0.17	ug/L	84

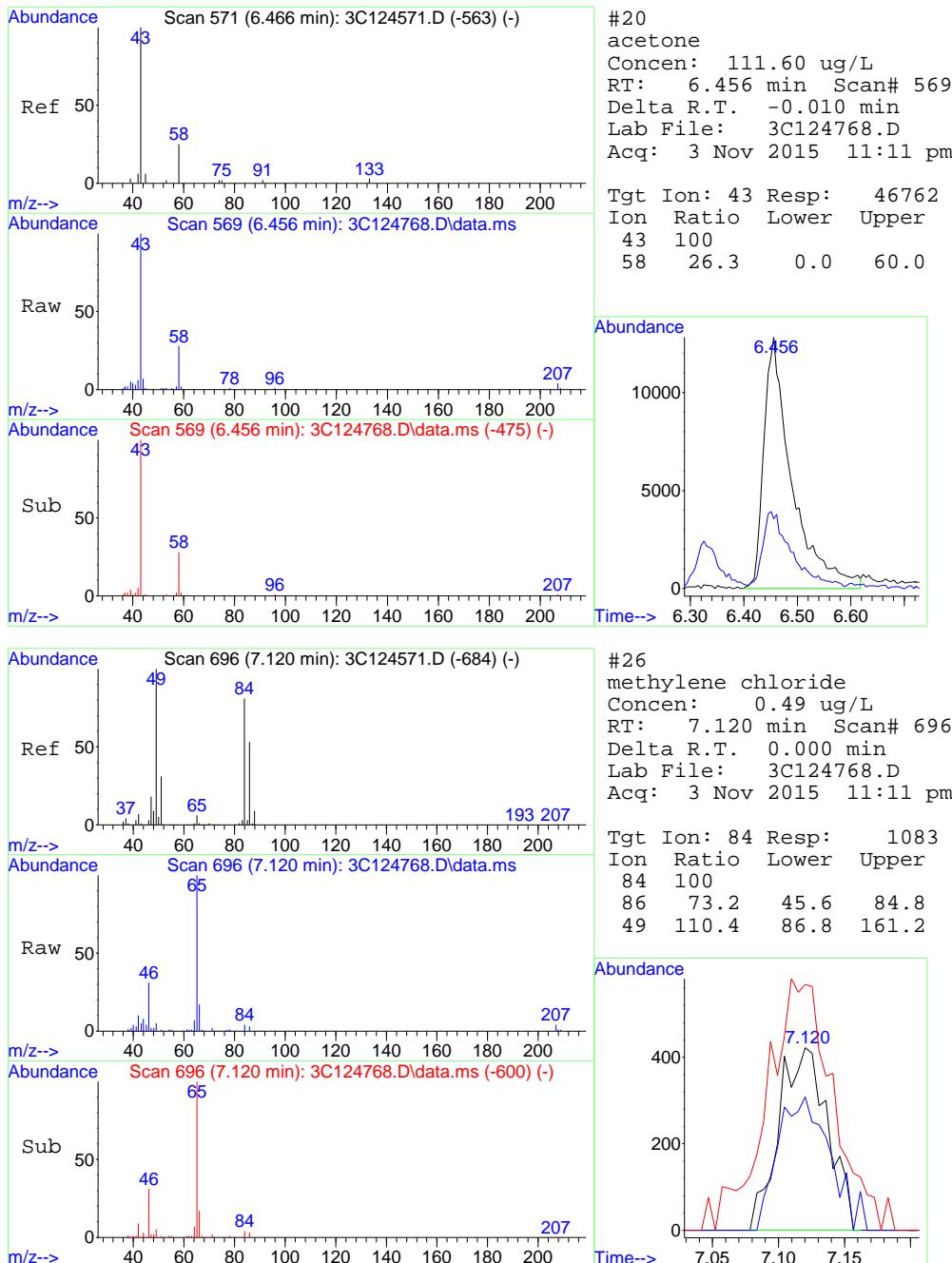
(#) = qualifier out of range (m) = manual integration (+) = signals summed

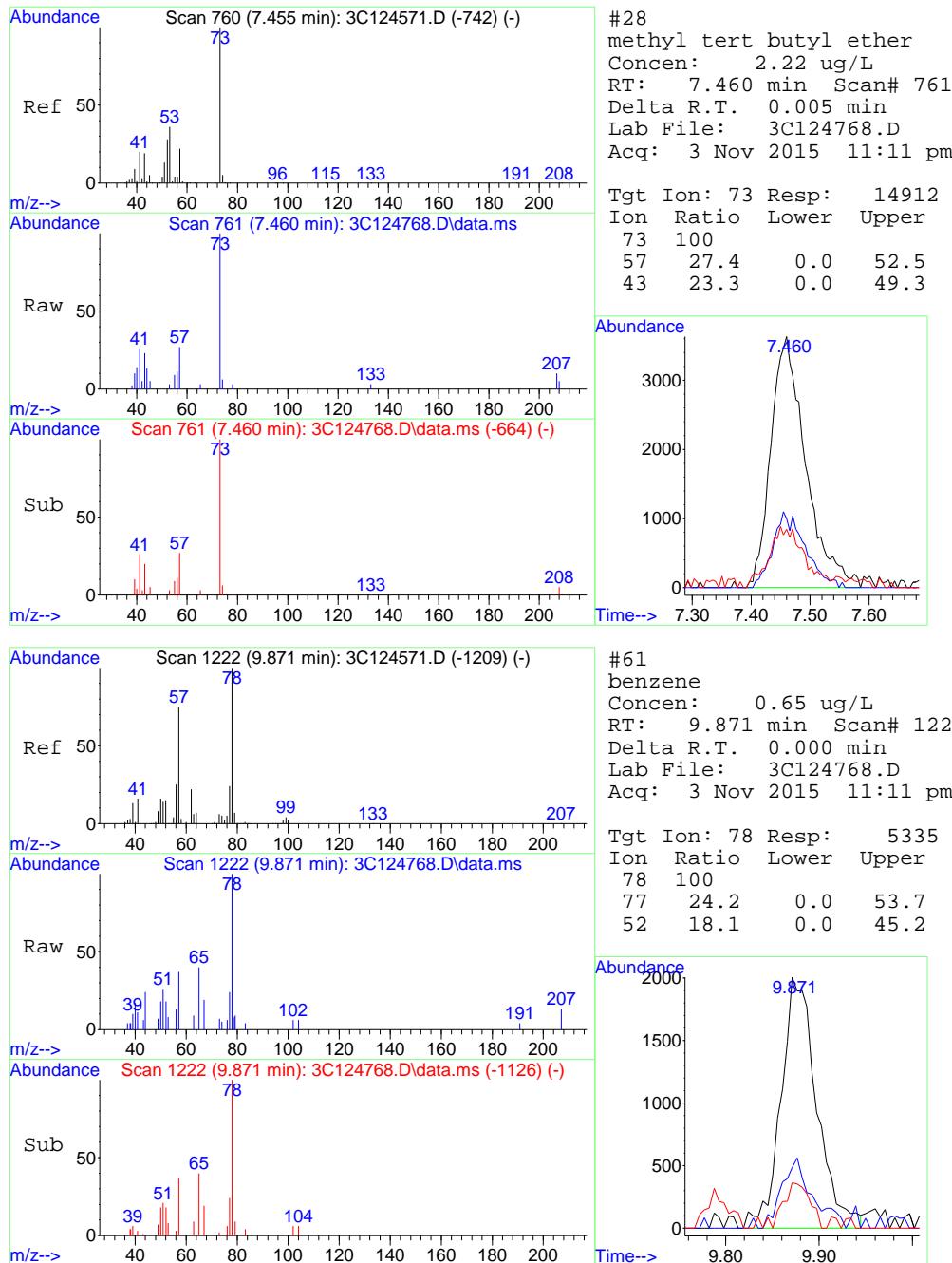
## Quantitation Report (QT Reviewed)

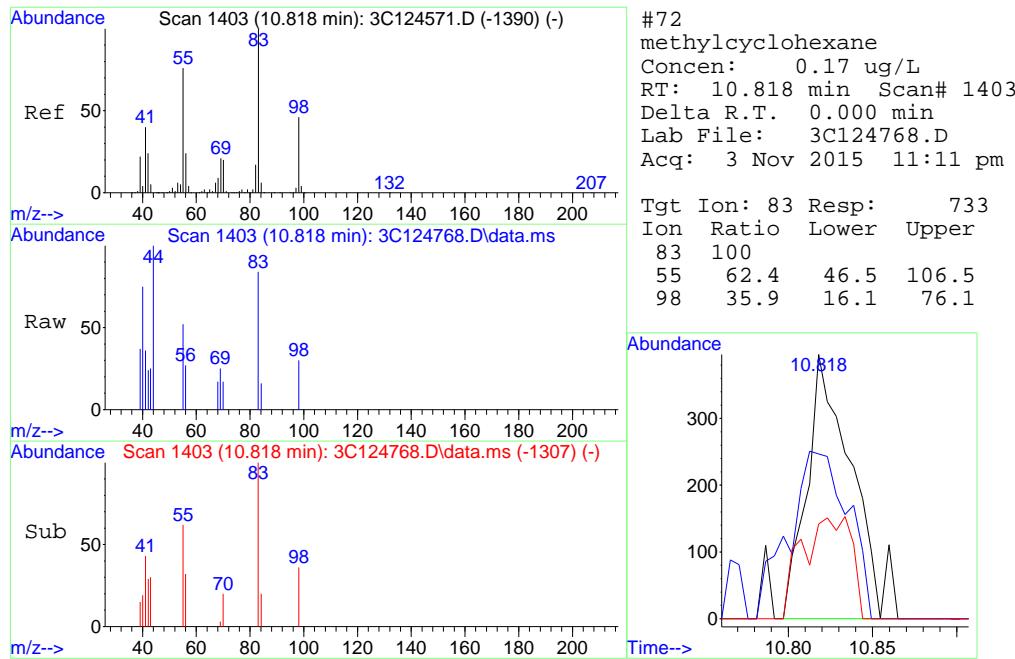
Data Path : C:\msdchem\1\DATA\3C\v3c5698-5699\  
 Data File : 3C124768.D  
 Acq On : 3 Nov 2015 11:11 pm  
 Operator : PrashanS  
 Sample : JC7097-4  
 Misc : MS93595,V3C5698,6.4,,,1  
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Nov 04 13:20:53 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration









## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\DATA\vd9618-9619\  
 Data File : d235585.D  
 Acq On : 6 Nov 2015 10:32 pm  
 Operator : BenM  
 Sample : jc7097-5  
 Misc : ms93595, vd9618, 6.0,,100,10,1  
 ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 09 07:33:18 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M  
 Quant Title : SW-846 Method 8260C  
 QLast Update : Thu Nov 05 07:40:57 2015  
 Response via : Initial Calibration

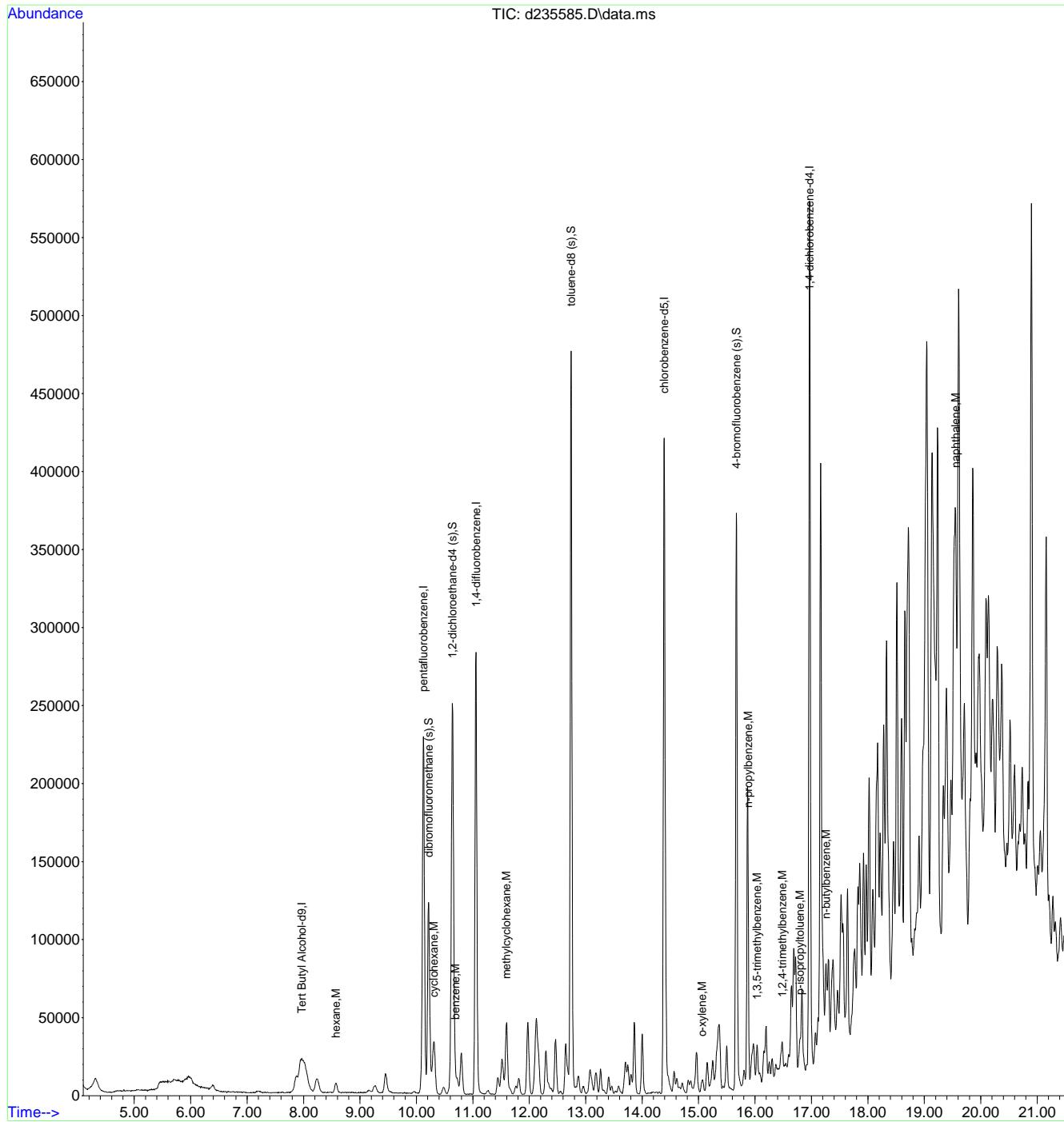
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) Tert Butyl Alcohol-d9	7.965	65	104333	500.00	ug/L	-0.02
4) pentafluorobenzene	10.125	168	191448	50.00	ug/L	-0.01
55) 1,4-difluorobenzene	11.056	114	271614	50.00	ug/L	0.00
87) chlorobenzene-d5	14.392	117	256033	50.00	ug/L	0.00
101) 1,4-dichlorobenzene-d4	16.966	152	157353	50.00	ug/L	-0.01
<hr/>						
System Monitoring Compounds						
48) dibromofluoromethane (s)	10.214	113	90639	51.38	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 102.76%			
49) 1,2-dichloroethane-d4 (s)	10.637	65	109332	51.82	ug/L	-0.01
Spiked Amount 50.000	Range 68 - 124		Recovery = 103.64%			
79) toluene-d8 (s)	12.740	98	343848	49.58	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery = 99.16%			
103) 4-bromofluorobenzene (s)	15.669	95	148879	50.27	ug/L	-0.01
Spiked Amount 50.000	Range 72 - 130		Recovery = 100.54%			
<hr/>						
Target Compounds						
				Qvalue		
56) cyclohexane	10.308	84	11055	3.00	ug/L	77
63) hexane	8.571	57	4586	2.06	ug/L	97
64) benzene	10.689	78	2587	0.32	ug/L	77
75) methylcyclohexane	11.594	83	24358	6.65	ug/L	94
98) o-xylene	15.057	106	1037	0.27	ug/L	71
109) n-propylbenzene	15.878	91	2740	0.22	ug/L	87
113) 1,3,5-trimethylbenzene	16.035	105	6039	0.62	ug/L	99
116) 1,2,4-trimethylbenzene	16.484	105	12651	1.28	ug/L	96
119) p-isopropyltoluene	16.793	119	5649	0.52	ug/L	95
126) n-butylbenzene	17.258	92	3806	0.68	ug/L	92
132) naphthalene	19.555	128	101395m	13.59	ug/L	

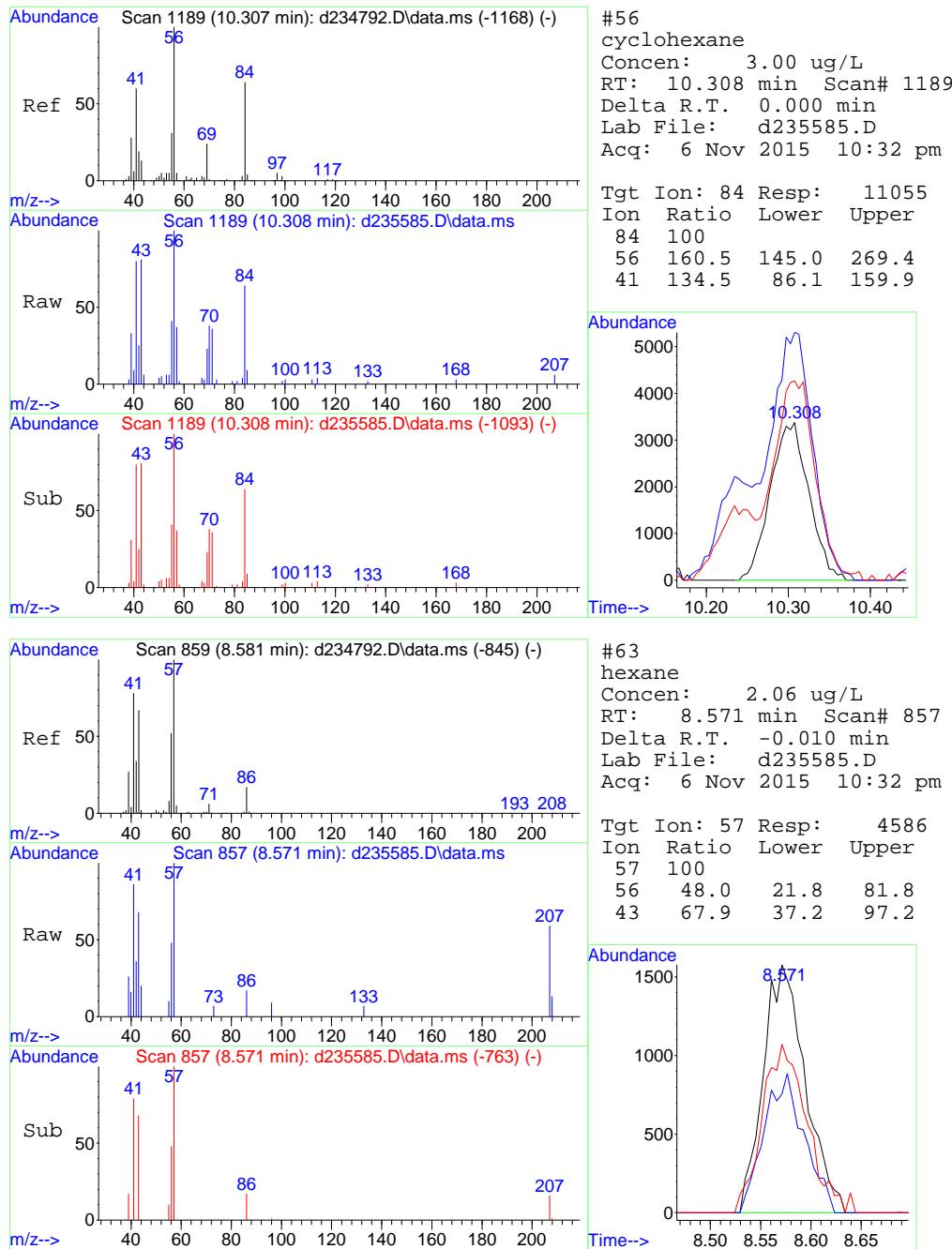
(#) = qualifier out of range (m) = manual integration (+) = signals summed

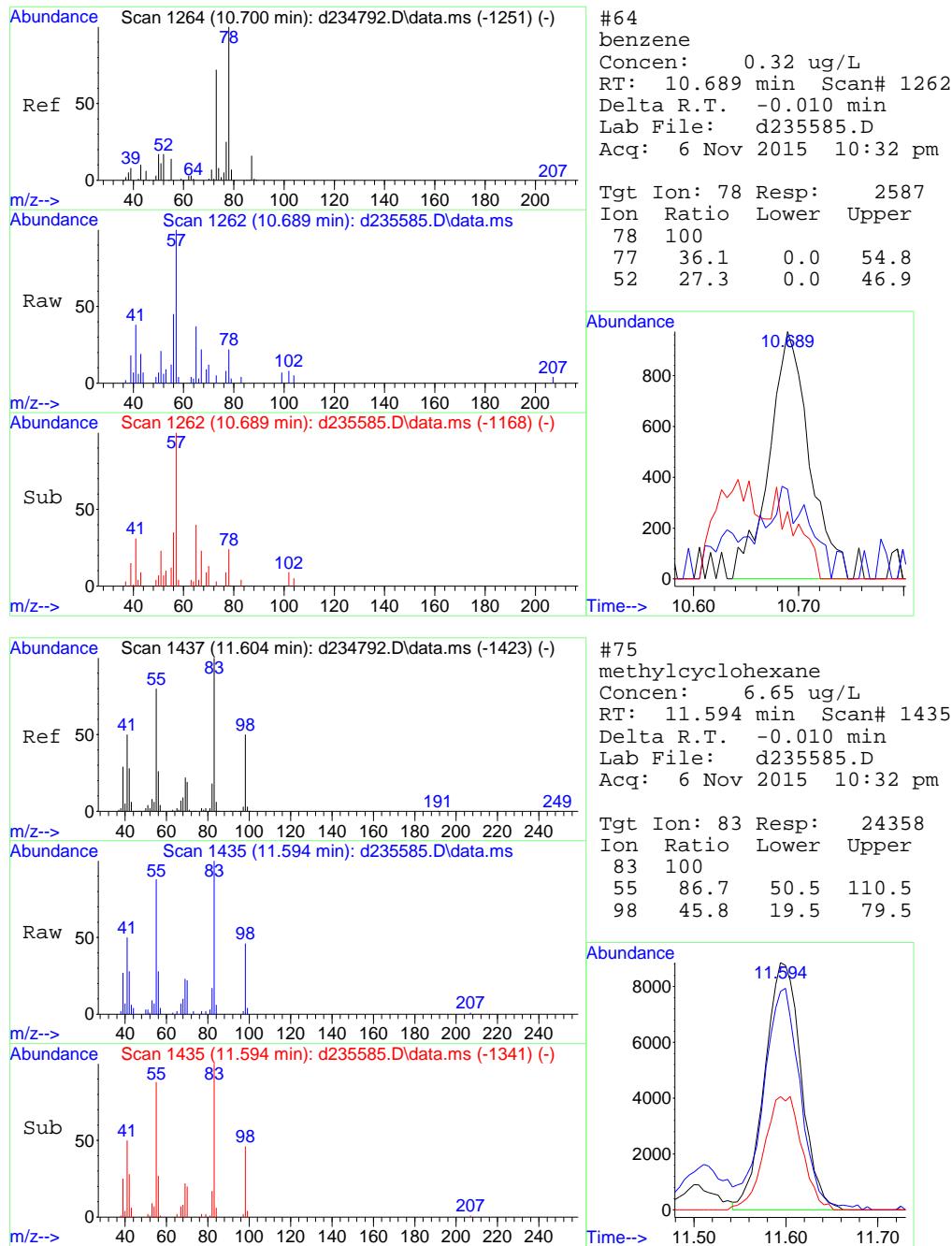
## Quantitation Report (QT Reviewed)

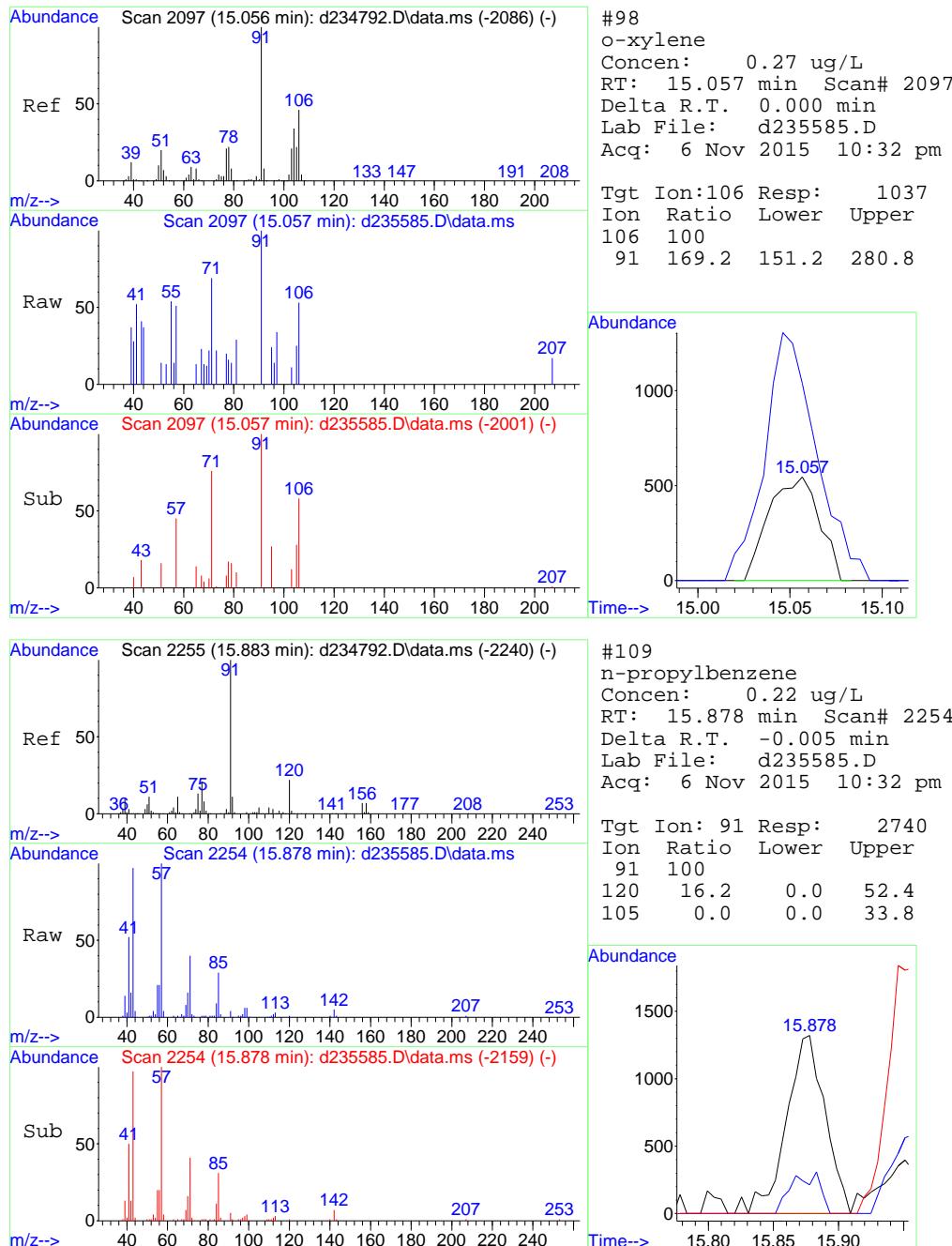
Data Path : C:\msdchem\1\DATA\D\vd9618-9619\  
 Data File : d235585.D  
 Acq On : 6 Nov 2015 10:32 pm  
 Operator : BenM  
 Sample : jc7097-5  
 Misc : ms93595, vd9618, 6.0, ,100,10,1  
 ALS Vial : 30 Sample Multiplier: 1

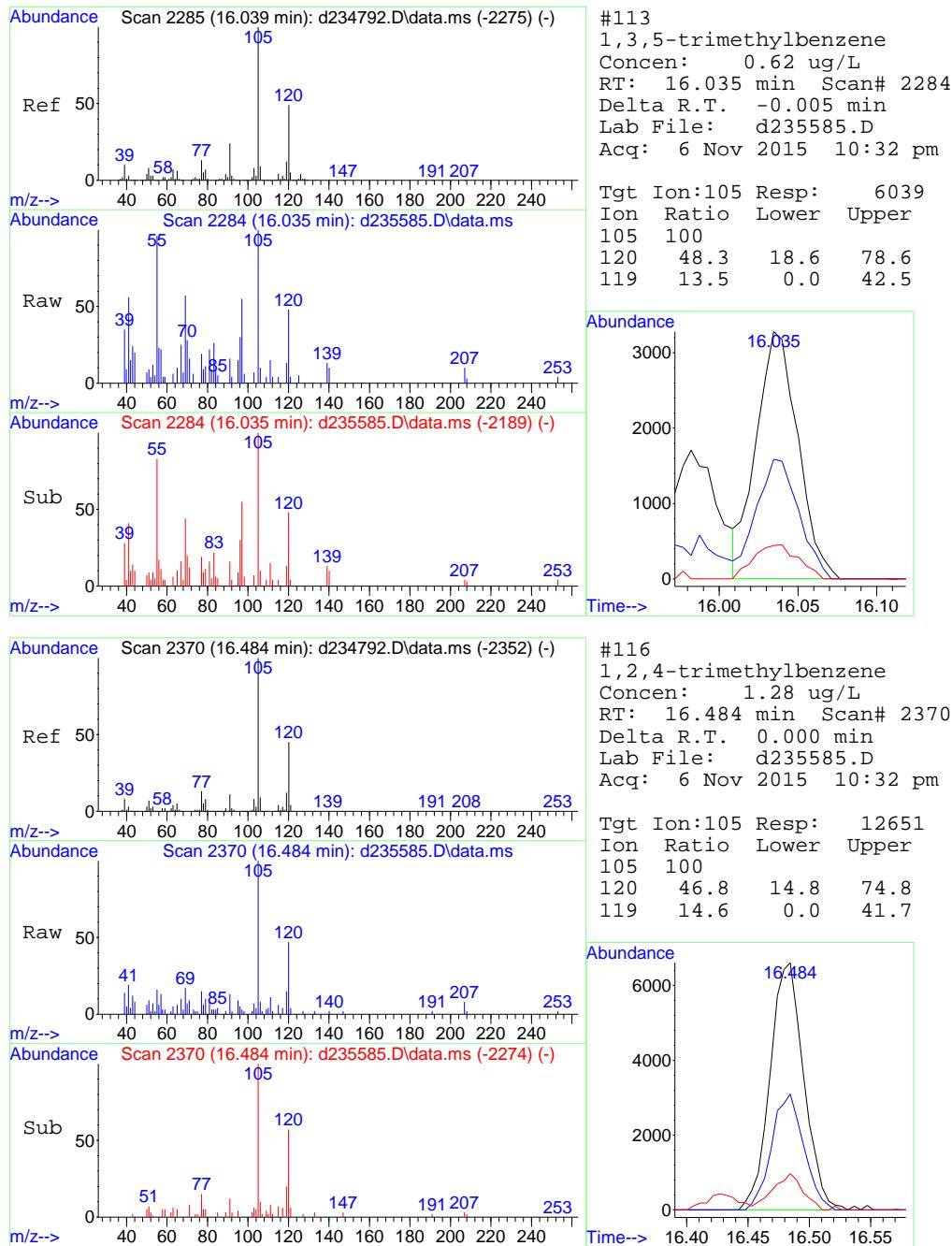
Quant Time: Nov 09 07:33:18 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M  
 Quant Title : SW-846 Method 8260C  
 QLast Update : Thu Nov 05 07:40:57 2015  
 Response via : Initial Calibration

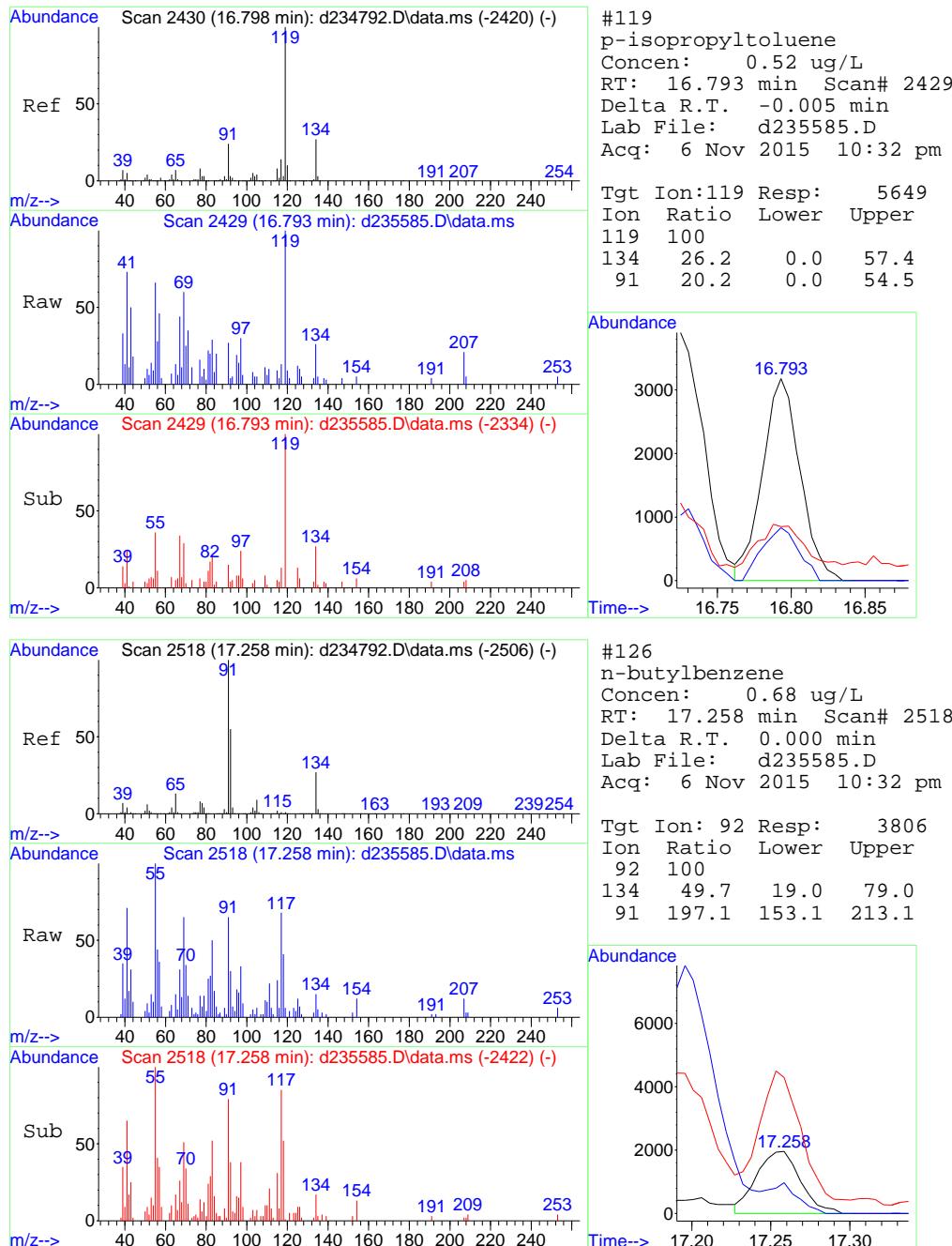


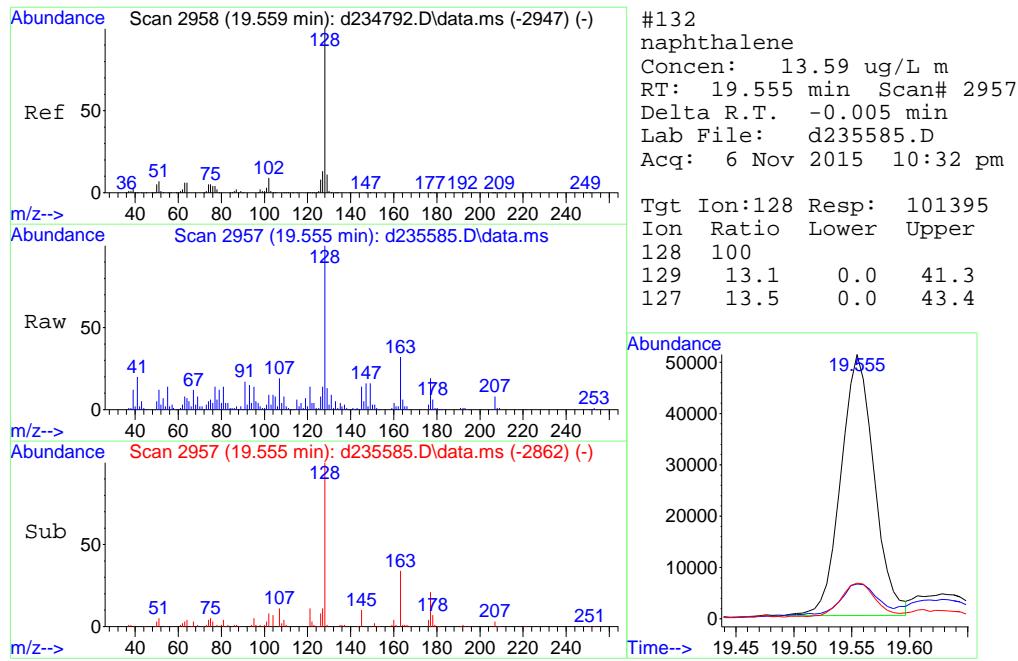












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5693-5694\  
 Data File : 3C124673.D  
 Acq On : 2 Nov 2015 2:01 am  
 Operator : PrashanS  
 Sample : MB  
 Misc : MS93758,V3C5694,5.0,,,1  
 ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 02 14:10:50 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
1) Tert Butyl Alcohol-d9	7.078	65	82552	500.00	ug/L	0.00
5) pentafluorobenzene	9.327	168	237052	50.00	ug/L	0.00
55) 1,4-difluorobenzene	10.248	114	279415	50.00	ug/L	0.00
84) chlorobenzene-d5	13.407	117	245687	50.00	ug/L	0.00
100) 1,4-dichlorobenzene-d4	15.703	152	133592	50.00	ug/L	0.00
<b>System Monitoring Compounds</b>						
46) dibromofluoromethane (s)	9.369	113	81891	48.46	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery =	96.92%		
47) 1,2-dichloroethane-d4 (s)	9.787	65	78196	47.29	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery =	94.58%		
76) toluene-d8 (s)	11.900	98	338548	50.15	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery =	100.30%		
102) 4-bromofluorobenzene (s)	14.552	95	129120	49.15	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery =	98.30%		

Target Compounds	Qvalue
------------------	--------

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5693-5694\  
 Data File : 3C124673.D

Acq On : 2 Nov 2015 2:01 am

Operator : PrashanS

Sample : MB

Misc : MS93758,V3C5694,5.0,,,1

ALS Vial : 30 Sample Multiplier: 1

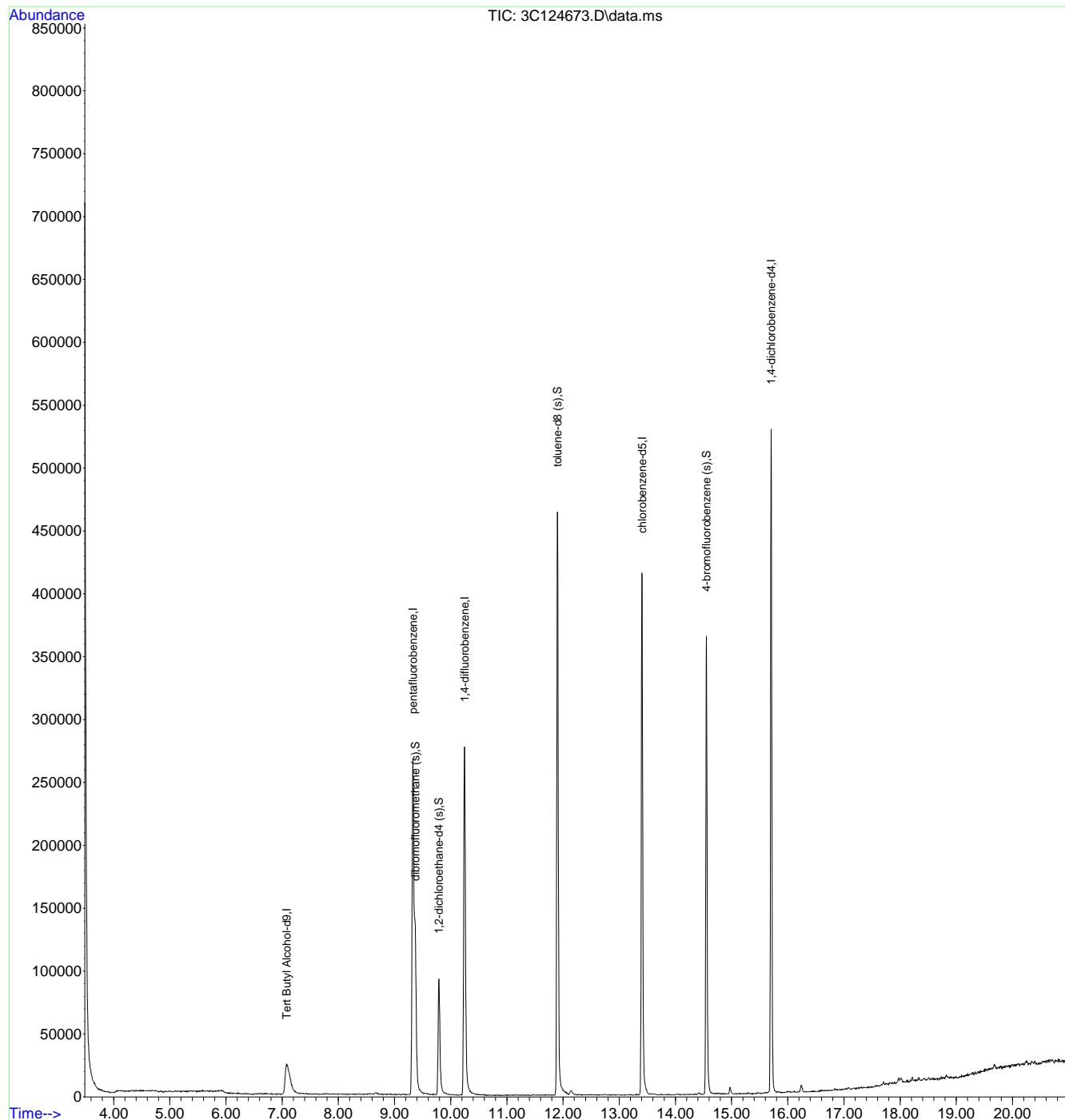
Quant Time: Nov 02 14:10:50 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M

Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um

QLast Update : Fri Oct 30 16:49:39 2015

Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5698-5699\  
 Data File : 3C124747.D  
 Acq On : 3 Nov 2015 1:30 pm  
 Operator : PrashanS  
 Sample : MB  
 Misc : MS93902,V3C5698,5.0,,,1  
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 04 13:10:43 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M  
 Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Fri Oct 30 16:49:39 2015  
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
1) Tert Butyl Alcohol-d9	7.083	65	77828	500.00	ug/L	0.00
5) pentafluorobenzene	9.327	168	219639	50.00	ug/L	0.00
55) 1,4-difluorobenzene	10.242	114	262023	50.00	ug/L	0.00
84) chlorobenzene-d5	13.401	117	225895	50.00	ug/L	0.00
100) 1,4-dichlorobenzene-d4	15.703	152	120346	50.00	ug/L	0.00
<b>System Monitoring Compounds</b>						
46) dibromofluoromethane (s)	9.369	113	77613	49.57	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery =	99.14%		
47) 1,2-dichloroethane-d4 (s)	9.787	65	73261	47.82	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery =	95.64%		
76) toluene-d8 (s)	11.900	98	319801	50.52	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery =	101.04%		
102) 4-bromofluorobenzene (s)	14.552	95	117276	49.55	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery =	99.10%		

Target Compounds	Qvalue
------------------	--------

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\3C\v3c5698-5699\

Data File : 3C124747.D

Acq On : 3 Nov 2015 1:30 pm

Operator : PrashanS

Sample : MB

Misc : MS93902,V3C5698,5.0,,,1

ALS Vial : 4 Sample Multiplier: 1

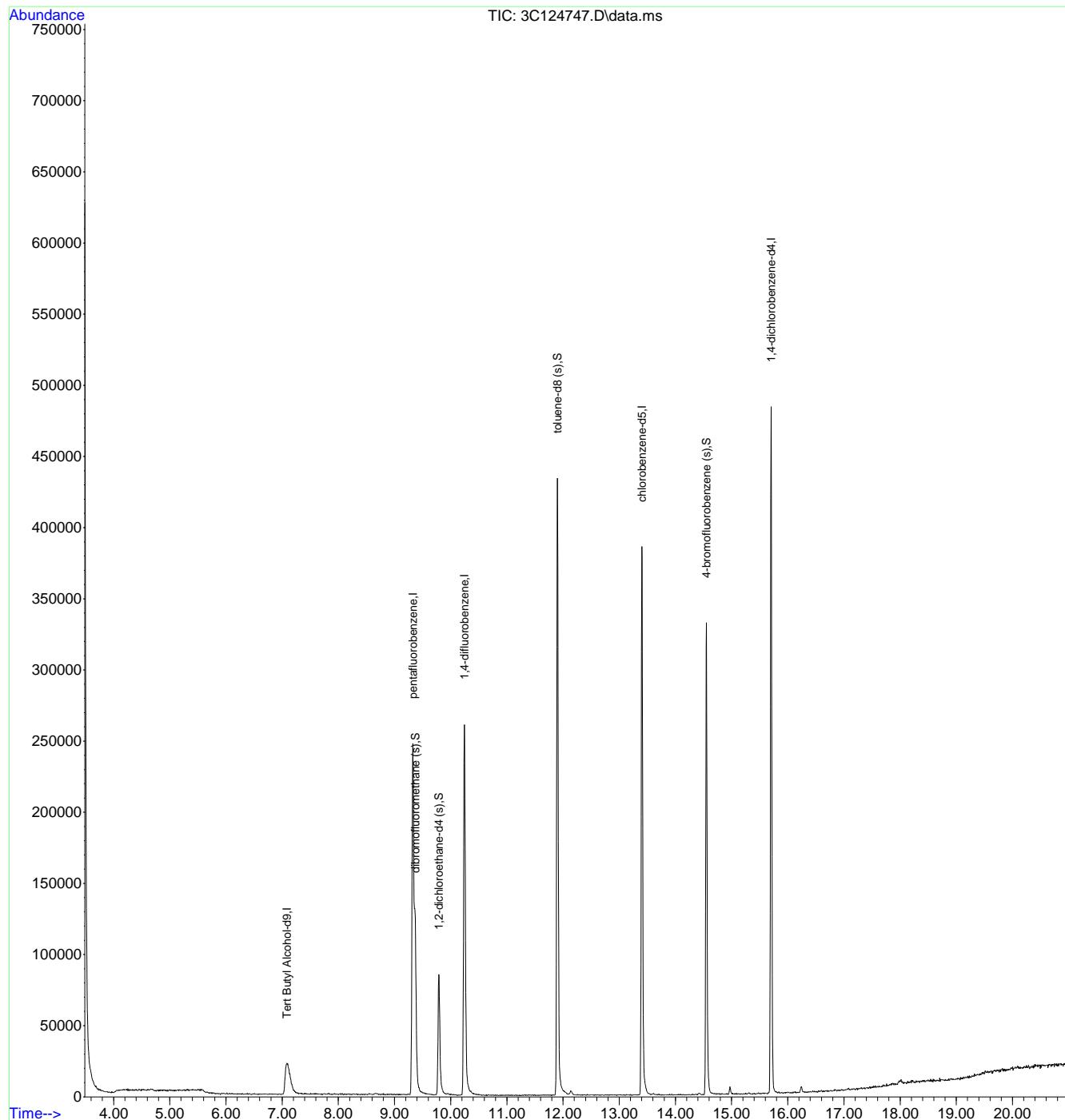
Quant Time: Nov 04 13:10:43 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3C5689.M

Quant Title : Method SW846 8260C, ZB624 60m x 0.25mm x 1.4um

QLast Update : Fri Oct 30 16:49:39 2015

Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9618-9619\  
 Data File : d235584.D  
 Acq On : 6 Nov 2015 10:02 pm  
 Operator : BenM  
 Sample : mb2  
 Misc : ms93780, vd9618, 5,,100,5,1  
 ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 09 07:31:56 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M  
 Quant Title : SW-846 Method 8260C  
 QLast Update : Thu Nov 05 07:40:57 2015  
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
1) Tert Butyl Alcohol-d9	7.959	65	112800	500.00	ug/L	-0.02
4) pentafluorobenzene	10.129	168	208530	50.00	ug/L	0.00
55) 1,4-difluorobenzene	11.055	114	295613	50.00	ug/L	0.00
87) chlorobenzene-d5	14.392	117	273790	50.00	ug/L	0.00
101) 1,4-dichlorobenzene-d4	16.965	152	156742	50.00	ug/L	-0.01
<b>System Monitoring Compounds</b>						
48) dibromofluoromethane (s)	10.213	113	98944	51.49	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 102.98%			
49) 1,2-dichloroethane-d4 (s)	10.642	65	116588	50.73	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery = 101.46%			
79) toluene-d8 (s)	12.744	98	372096	49.30	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery = 98.60%			
103) 4-bromofluorobenzene (s)	15.673	95	152800	51.80	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery = 103.60%			

Target Compounds	Qvalue
------------------	--------

(#) = qualifier out of range (m) = manual integration (+) = signals summed

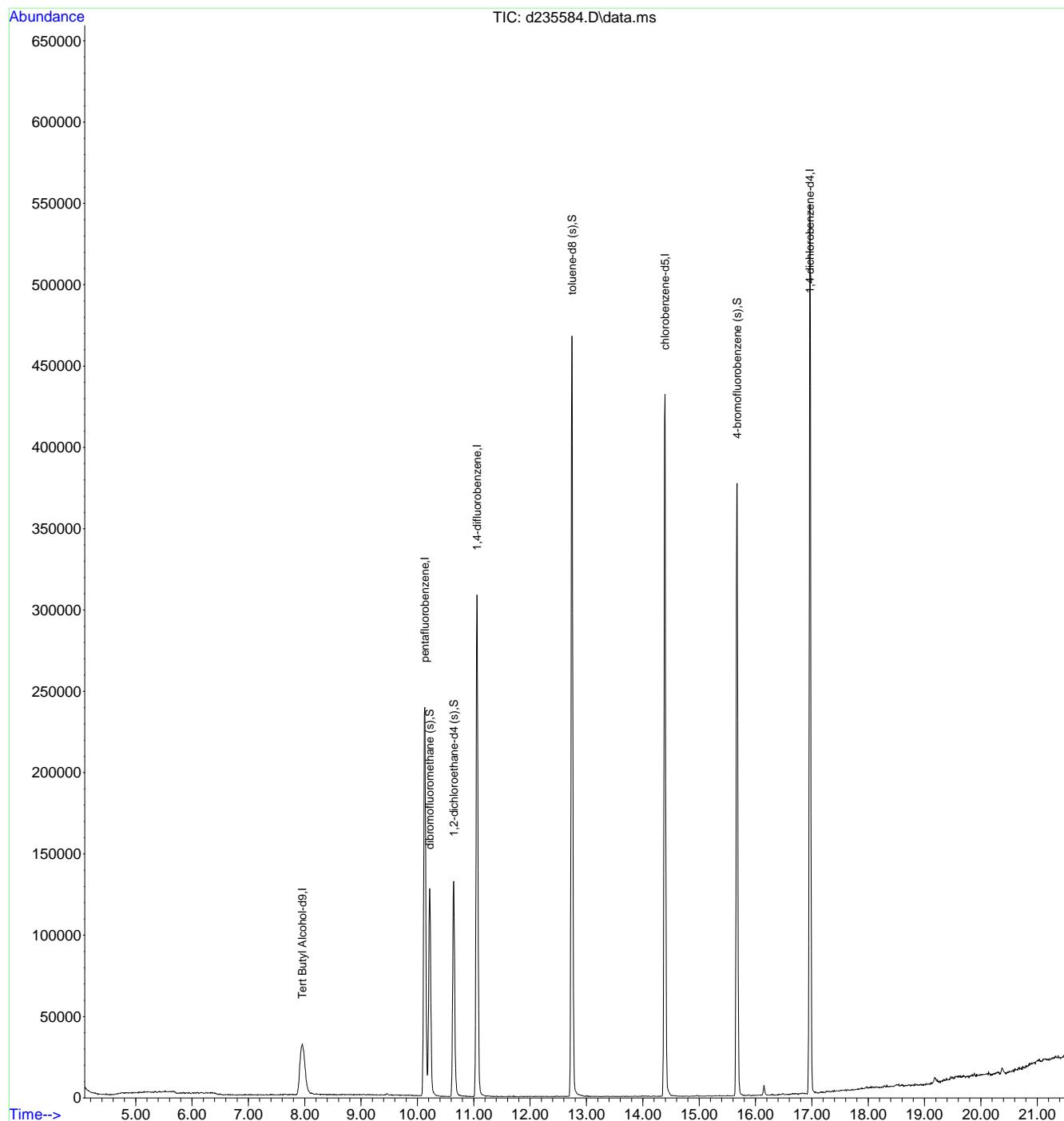
7.2.3

7

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9618-9619\  
 Data File : d235584.D  
 Acq On : 6 Nov 2015 10:02 pm  
 Operator : BenM  
 Sample : mb2  
 Misc : ms93780, vd9618, 5,,100,5,1  
 ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 09 07:31:56 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M  
 Quant Title : SW-846 Method 8260C  
 QLast Update : Thu Nov 05 07:40:57 2015  
 Response via : Initial Calibration





## GC/MS Semi-volatiles

### QC Data Summaries

∞

---

**Includes the following where applicable:**

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

**Method Blank Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-MB1	3E77542.D	1	11/02/15	SD	10/28/15	OP88470	E3E3375

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	150	ug/kg	
95-48-7	2-Methylphenol	ND	67	48	ug/kg	
	3&4-Methylphenol	ND	67	32	ug/kg	
100-02-7	4-Nitrophenol	ND	330	57	ug/kg	
108-95-2	Phenol	ND	67	25	ug/kg	
83-32-9	Acenaphthene	ND	33	31	ug/kg	
120-12-7	Anthracene	ND	33	2.9	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	6.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	7.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	6.9	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	7.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	67	6.2	ug/kg	
218-01-9	Chrysene	ND	33	5.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	12	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	3.9	ug/kg	
84-66-2	Diethyl phthalate	ND	67	4.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	12	ug/kg	
206-44-0	Fluoranthene	ND	33	4.1	ug/kg	
86-73-7	Fluorene	ND	33	4.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	17	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	6.2	ug/kg	
85-01-8	Phenanthrene	ND	33	3.7	ug/kg	
129-00-0	Pyrene	ND	33	4.2	ug/kg	
110-86-1	Pyridine	ND	67	17	ug/kg	
91-22-5	Quinoline	ND	170	12	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	89% 30-106%
4165-62-2	Phenol-d5	88% 30-106%
118-79-6	2,4,6-Tribromophenol	98% 24-140%
4165-60-0	Nitrobenzene-d5	108% 26-122%
321-60-8	2-Fluorobiphenyl	94% 36-112%

## Method Blank Summary

Page 2 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-MB1	3E77542.D	1	11/02/15	SD	10/28/15	OP88470	E3E3375

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Surrogate Recoveries	Limits
1718-51-0 Terphenyl-d14	90%	36-132%

8.1.1

8

**Method Blank Summary**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-MB1	2M78948.D	1	11/05/15	AN	10/28/15	OP88470	E2M3443

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	150	ug/kg	
95-48-7	2-Methylphenol	ND	67	48	ug/kg	
	3&4-Methylphenol	ND	67	32	ug/kg	
100-02-7	4-Nitrophenol	ND	330	57	ug/kg	
108-95-2	Phenol	ND	67	25	ug/kg	
83-32-9	Acenaphthene	ND	33	31	ug/kg	
120-12-7	Anthracene	ND	33	2.9	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	6.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	7.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	6.9	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	7.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	67	6.2	ug/kg	
218-01-9	Chrysene	ND	33	5.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	12	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	3.9	ug/kg	
84-66-2	Diethyl phthalate	ND	67	4.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	12	ug/kg	
206-44-0	Fluoranthene	ND	33	4.1	ug/kg	
86-73-7	Fluorene	ND	33	4.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	17	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	6.2	ug/kg	
85-01-8	Phenanthrene	ND	33	3.7	ug/kg	
129-00-0	Pyrene	ND	33	4.2	ug/kg	
110-86-1	Pyridine	ND	67	17	ug/kg	
91-22-5	Quinoline	ND	170	12	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	82% 30-106%
4165-62-2	Phenol-d5	79% 30-106%
118-79-6	2,4,6-Tribromophenol	90% 24-140%
4165-60-0	Nitrobenzene-d5	83% 26-122%
321-60-8	2-Fluorobiphenyl	86% 36-112%

## Method Blank Summary

Page 2 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-MB1	2M78948.D	1	11/05/15	AN	10/28/15	OP88470	E2M3443

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Surrogate Recoveries	Limits
1718-51-0 Terphenyl-d14	87%	36-132%

## Blank Spike Summary

Page 1 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-BS1	3E77543.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
105-67-9	2,4-Dimethylphenol	1670	1570	94	49-115
51-28-5	2,4-Dinitrophenol	3330	2880	86	30-127
95-48-7	2-Methylphenol	1670	1340	80	53-103
	3&4-Methylphenol	1670	1300	78	53-102
100-02-7	4-Nitrophenol	1670	1770	106	36-143
108-95-2	Phenol	1670	1380	83	45-106
83-32-9	Acenaphthene	1670	1380	83	60-108
120-12-7	Anthracene	1670	1440	86	59-109
56-55-3	Benzo(a)anthracene	1670	1480	89	52-113
50-32-8	Benzo(a)pyrene	1670	1580	95	56-122
205-99-2	Benzo(b)fluoranthene	1670	1690	101	53-119
191-24-2	Benzo(g,h,i)perylene	1670	1260	76	48-117
207-08-9	Benzo(k)fluoranthene	1670	1590	95	52-115
92-52-4	1,1'-Biphenyl	1670	1280	77	54-101
218-01-9	Chrysene	1670	1440	86	51-119
53-70-3	Dibenzo(a,h)anthracene	1670	1480	89	49-118
84-74-2	Di-n-butyl phthalate	1670	1450	87	56-117
84-66-2	Diethyl phthalate	1670	1450	87	54-112
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1330	80	45-130
206-44-0	Fluoranthene	1670	1570	94	58-110
86-73-7	Fluorene	1670	1420	85	59-108
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1400	84	48-120
91-57-6	2-Methylnaphthalene	1670	1360	82	48-104
85-01-8	Phenanthrene	1670	1420	85	57-105
129-00-0	Pyrene	1670	1410	85	50-117
110-86-1	Pyridine	1670	1070	64	26-110
91-22-5	Quinoline	1670	1380	83	51-102

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	82%	30-106%
4165-62-2	Phenol-d5	87%	30-106%
118-79-6	2,4,6-Tribromophenol	99%	24-140%
4165-60-0	Nitrobenzene-d5	95%	26-122%
321-60-8	2-Fluorobiphenyl	87%	36-112%

\* = Outside of Control Limits.

## Blank Spike Summary

Page 2 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-BS1	3E77543.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Surrogate Recoveries	BSP	Limits
1718-51-0	Terphenyl-d14	92%	36-132%

8.2.1  
8

---

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-MS	3E77559.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375
OP88470-MSD	3E77558.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375
JC7098-1 <sup>a</sup>	3E77548.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Compound	JC7098-1		Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
		ug/kg	Q								
105-67-9	2,4-Dimethylphenol	ND	3380	2760	82	3340	2850	85	3	23-133/34	
51-28-5	2,4-Dinitrophenol	ND	6750	2020	30	6670	2160	32	7	10-110/51	
95-48-7	2-Methylphenol	ND	3380	2390	71	3340	2480	74	4	32-111/34	
	3&4-Methylphenol	ND	3380	2400	71	3340	2460	74	2	32-113/34	
100-02-7	4-Nitrophenol	ND	3380	ND	0* <sup>b</sup>	3340	ND	0* <sup>b</sup>	nc	14-154/39	
108-95-2	Phenol	ND	3380	2470	73	3340	2520	76	2	25-112/33	
83-32-9	Acenaphthene	ND	3380	2510	74	3340	2570	77	2	34-125/36	
120-12-7	Anthracene	ND	3380	2550	76	3340	2640	79	3	31-131/41	
56-55-3	Benz(a)anthracene	ND	3380	2620	78	3340	2750	82	5	23-136/43	
50-32-8	Benzo(a)pyrene	ND	3380	2980	88	3340	2940	88	1	22-144/42	
205-99-2	Benzo(b)fluoranthene	ND	3380	2870	85	3340	2890	87	1	18-145/43	
191-24-2	Benzo(g,h,i)perylene	ND	3380	3190	94	3340	2820	84	12	20-138/43	
207-08-9	Benzo(k)fluoranthene	ND	3380	2890	86	3340	2750	82	5	27-129/43	
92-52-4	1,1'-Biphenyl	ND	3380	2470	73	3340	2410	72	2	33-116/32	
218-01-9	Chrysene	ND	3380	2530	75	3340	2620	79	3	21-142/43	
53-70-3	Dibenzo(a,h)anthracene	ND	3380	3420	101	3340	3050	91	11	25-135/41	
84-74-2	Di-n-butyl phthalate	ND	3380	2490	74	3340	2610	78	5	32-131/34	
84-66-2	Diethyl phthalate	ND	3380	2480	73	3340	2570	77	4	35-124/32	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	3380	2490	74	3340	2540	76	2	25-146/35	
206-44-0	Fluoranthene	ND	3380	2490	74	3340	2590	78	4	15-143/46	
86-73-7	Fluorene	ND	3380	2530	75	3340	2570	77	2	30-129/37	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	3380	3900	116	3340	3520	105	10	23-141/44	
91-57-6	2-Methylnaphthalene	ND	3380	2520	75	3340	2570	77	2	21-125/33	
85-01-8	Phenanthrene	88.7	3380	2560	73	3340	2630	76	3	14-144/44	
129-00-0	Pyrene	34.1	J	3380	2620	77	3340	2670	79	2	16-147/46
110-86-1	Pyridine	ND	3380	1980	59	3340	2160	65	9	10-110/43	
91-22-5	Quinoline	ND	3380	2440	72	3340	2490	75	2	26-116/32	

CAS No.	Surrogate Recoveries	MS	MSD	JC7098-1	Limits
367-12-4	2-Fluorophenol	72%	76%	76%	30-106%
4165-62-2	Phenol-d5	76%	79%	75%	30-106%
118-79-6	2,4,6-Tribromophenol	86%	92%	94%	24-140%
4165-60-0	Nitrobenzene-d5	90%	90%	89%	26-122%
321-60-8	2-Fluorobiphenyl	79%	78%	80%	36-112%

\* = Outside of Control Limits.

## Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88470-MS	3E77559.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375
OP88470-MSD	3E77558.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375
JC7098-1 <sup>a</sup>	3E77548.D	1	11/03/15	SD	10/28/15	OP88470	E3E3375

The QC reported here applies to the following samples:

Method: SW846 8270D

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Surrogate Recoveries	MS	MSD	JC7098-1	Limits
1718-51-0	Terphenyl-d14	82%	83%	89%	36-132%

- (a) Elevated detection limit due to low volume of bad matrix sample extracted.  
(b) Outside control limits due to matrix interference.

\* = Outside of Control Limits.

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E2M3440-DFTPP	Injection Date:	11/04/15
Lab File ID:	2M78894.D	Injection Time:	13:14
Instrument ID:	GCMS2M		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	28596	31.6	Pass
68	Less than 2.0% of mass 69	591	0.65	(1.18) <sup>a</sup> Pass
69	Mass 69 relative abundance	49941	55.1	Pass
70	Less than 2.0% of mass 69	254	0.28	(0.51) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	44890	49.6	Pass
197	Less than 1.0% of mass 198	222	0.25	Pass
198	Base peak, 100% relative abundance	90594	100.0	Pass
199	5.0 - 9.0% of mass 198	6108	6.74	Pass
275	10.0 - 30.0% of mass 198	22697	25.1	Pass
365	1.0 - 100.0% of mass 198	2967	3.28	Pass
441	Present, but less than mass 443	10676	11.8	(76.2) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	73839	81.5	Pass
443	17.0 - 23.0% of mass 442	14005	15.5	(19.0) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M3440-IC3440	2M78895.D	11/04/15	13:29	00:15	Initial cal 1.0
E2M3440-IC3440	2M78896.D	11/04/15	13:56	00:42	Initial cal 2.0
E2M3440-IC3440	2M78897.D	11/04/15	14:24	01:10	Initial cal 5.0
E2M3440-IC3440	2M78898.D	11/04/15	14:51	01:37	Initial cal 10
E2M3440-IC3440	2M78899.D	11/04/15	15:19	02:05	Initial cal 25
E2M3440-ICC3440	2M78900.D	11/04/15	15:47	02:33	Initial cal 50
E2M3440-IC3440	2M78901.D	11/04/15	16:14	03:00	Initial cal 80
E2M3440-IC3440	2M78902.D	11/04/15	16:42	03:28	Initial cal 100
E2M3440-ICV3440	2M78904.D	11/04/15	17:37	04:23	Initial cal verification 50
E2M3440-ICV3440	2M78907.D	11/04/15	18:04	04:50	Initial cal verification 50

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E2M3441-DFTPP	Injection Date:	11/04/15
Lab File ID:	2M78910A.D	Injection Time:	19:07
Instrument ID:	GCMS2M		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	27172	32.0	Pass
68	Less than 2.0% of mass 69	551	0.65	(1.16) <sup>a</sup> Pass
69	Mass 69 relative abundance	47332	55.7	Pass
70	Less than 2.0% of mass 69	199	0.23	(0.42) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	41728	49.1	Pass
197	Less than 1.0% of mass 198	384	0.45	Pass
198	Base peak, 100% relative abundance	84912	100.0	Pass
199	5.0 - 9.0% of mass 198	5800	6.83	Pass
275	10.0 - 30.0% of mass 198	20838	24.5	Pass
365	1.0 - 100.0% of mass 198	2831	3.33	Pass
441	Present, but less than mass 443	9395	11.1	(74.7) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	64803	76.3	Pass
443	17.0 - 23.0% of mass 442	12569	14.8	(19.4) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M3441-IC3441	2M78911.D	11/04/15	19:21	00:14	Initial cal 100
E2M3441-IC3441	2M78912.D	11/04/15	19:48	00:41	Initial cal 1
E2M3441-IC3441	2M78913.D	11/04/15	20:16	01:09	Initial cal 80
E2M3441-IC3441	2M78914.D	11/04/15	20:43	01:36	Initial cal 2
E2M3441-ICC3441	2M78915.D	11/04/15	21:10	02:03	Initial cal 50
E2M3441-IC3441	2M78916.D	11/04/15	21:38	02:31	Initial cal 5
E2M3441-IC3441	2M78917.D	11/04/15	22:05	02:58	Initial cal 25
E2M3441-IC3441	2M78918.D	11/04/15	22:32	03:25	Initial cal 10
E2M3441-ICV3440	2M78920.D	11/04/15	23:26	04:19	Initial cal verification 50
E2M3441-ICV3441	2M78920A.D	11/04/15	23:26	04:19	Initial cal verification 50
E2M3441-ICV3440	2M78921.D	11/04/15	23:53	04:46	Initial cal verification 50
E2M3441-ICV3441	2M78921A.D	11/04/15	23:53	04:46	Initial cal verification 50
E2M3441-ICV3441	2M78922.D	11/05/15	00:20	05:13	Initial cal verification 50
E2M3441-ICV3441	2M78923A.D	11/05/15	00:48	05:41	Initial cal verification 50
E2M3441-ICV3440	2M78923.D	11/05/15	00:48	05:41	Initial cal verification 50

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E2M3442-DFTPP	Injection Date:	11/05/15
Lab File ID:	2M78925.D	Injection Time:	09:08
Instrument ID:	GCMS2M		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	26846	30.3	Pass
68	Less than 2.0% of mass 69	826	0.93	Pass
69	Mass 69 relative abundance	48967	55.2	Pass
70	Less than 2.0% of mass 69	245	0.28	Pass
127	40.0 - 60.0% of mass 198	42954	48.5	Pass
197	Less than 1.0% of mass 198	468	0.53	Pass
198	Base peak, 100% relative abundance	88653	100.0	Pass
199	5.0 - 9.0% of mass 198	6020	6.79	Pass
275	10.0 - 30.0% of mass 198	21019	23.7	Pass
365	1.0 - 100.0% of mass 198	3075	3.47	Pass
441	Present, but less than mass 443	10483	11.8	Pass
442	40.0 - 100.0% of mass 198	72426	81.7	Pass
443	17.0 - 23.0% of mass 442	13847	15.6	Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M3442-ICV3440	2M78926.D	11/05/15	09:24	00:16	Initial cal verification 50

# Instrument Performance Check (DFTPP)

Page 1 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E2M3443-DFTPP	Injection Date:	11/05/15
Lab File ID:	2M78927.D	Injection Time:	09:56
Instrument ID:	GCMS2M		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	26985	31.2	Pass
68	Less than 2.0% of mass 69	769	0.89	(1.61) <sup>a</sup> Pass
69	Mass 69 relative abundance	47761	55.3	Pass
70	Less than 2.0% of mass 69	123	0.14	(0.26) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	42296	49.0	Pass
197	Less than 1.0% of mass 198	353	0.41	Pass
198	Base peak, 100% relative abundance	86378	100.0	Pass
199	5.0 - 9.0% of mass 198	5657	6.55	Pass
275	10.0 - 30.0% of mass 198	20702	24.0	Pass
365	1.0 - 100.0% of mass 198	3037	3.52	Pass
441	Present, but less than mass 443	10402	12.0	(81.8) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	69123	80.0	Pass
443	17.0 - 23.0% of mass 442	12713	14.7	(18.4) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M3443-CC3440	2M78928.D	11/05/15	10:09	00:13	Continuing cal 50
E2M3443-CC3441	2M78929.D	11/05/15	10:36	00:40	Continuing cal 50
OP88530-MB1	2M78930.D	11/05/15	11:03	01:07	Method Blank
ZZZZZZ	2M78931.D	11/05/15	11:31	01:35	(unrelated sample)
OP81205-MB1R	2M78933.D	11/05/15	12:25	02:29	Method Blank
OP81205-BS1R	2M78934.D	11/05/15	12:53	02:57	Blank Spike
OP81205-BS2R	2M78935.D	11/05/15	13:20	03:24	Blank Spike
OP81205-BS3R	2M78936.D	11/05/15	13:48	03:52	Blank Spike
OP81205-BS4R	2M78937.D	11/05/15	14:16	04:20	Blank Spike
OP81205-MB1Q	2M78938.D	11/05/15	15:11	05:15	Method Blank
OP81205-BS1Q	2M78939.D	11/05/15	15:38	05:42	Blank Spike
OP81205-BS2Q	2M78940.D	11/05/15	16:06	06:10	Blank Spike
OP81205-BS3Q	2M78941.D	11/05/15	16:34	06:38	Blank Spike
OP81205-BS4Q	2M78942.D	11/05/15	17:02	07:06	Blank Spike
OP81205-MB1P	2M78943.D	11/05/15	17:29	07:33	Method Blank
OP81205-BS1P	2M78944.D	11/05/15	17:57	08:01	Blank Spike
OP81205-BS2P	2M78945.D	11/05/15	18:25	08:29	Blank Spike
OP81205-BS3P	2M78946.D	11/05/15	18:52	08:56	Blank Spike
OP81205-BS4P	2M78947.D	11/05/15	19:20	09:24	Blank Spike

# Instrument Performance Check (DFTPP)

Page 2 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E2M3443-DFTPP	Injection Date:	11/05/15
Lab File ID:	2M78927.D	Injection Time:	09:56
Instrument ID:	GCMS2M		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP88470-MB1	2M78948.D	11/05/15	19:47	09:51	Method Blank
JC7097-1	2M78949.D	11/05/15	20:15	10:19	MH386-1-20151026(3')
JC7097-3	2M78950.D	11/05/15	20:42	10:46	MH386-3-20151026(3')
ZZZZZZ	2M78951.D	11/05/15	21:10	11:14	(unrelated sample)
ZZZZZZ	2M78952.D	11/05/15	21:38	11:42	(unrelated sample)

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E3E3323-DFTPP	Injection Date:	09/29/15
Lab File ID:	3E76357.D	Injection Time:	23:59
Instrument ID:	GCMS3E		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	54287	41.0	Pass
68	Less than 2.0% of mass 69	339	0.26	(0.59) <sup>a</sup> Pass
69	Mass 69 relative abundance	57386	43.3	Pass
70	Less than 2.0% of mass 69	268	0.20	(0.47) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	79282	59.8	Pass
197	Less than 1.0% of mass 198	449	0.34	Pass
198	Base peak, 100% relative abundance	132485	100.0	Pass
199	5.0 - 9.0% of mass 198	8652	6.53	Pass
275	10.0 - 30.0% of mass 198	34337	25.9	Pass
365	1.0 - 100.0% of mass 198	5252	3.96	Pass
441	Present, but less than mass 443	17699	13.4	(88.9) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	107288	81.0	Pass
443	17.0 - 23.0% of mass 442	19917	15.0	(18.6) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E3E3323-IC3323	3E76358.D	09/30/15	00:21	00:22	Initial cal 2
E3E3323-IC3323	3E76359.D	09/30/15	00:47	00:48	Initial cal 100
E3E3323-IC3323	3E76360.D	09/30/15	01:12	01:13	Initial cal 1
E3E3323-IC3323	3E76361.D	09/30/15	01:38	01:39	Initial cal 80
E3E3323-IC3323	3E76362.D	09/30/15	02:04	02:05	Initial cal 10
E3E3323-IC3323	3E76363.D	09/30/15	02:30	02:31	Initial cal 25
E3E3323-IC3323	3E76364.D	09/30/15	02:55	02:56	Initial cal 5
E3E3323-IC3323	3E76365.D	09/30/15	03:21	03:22	Initial cal 50

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E3E3325-DFTPP	Injection Date:	09/30/15
Lab File ID:	3E76381.D	Injection Time:	10:24
Instrument ID:	GCMS3E		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	30429	42.4	Pass
68	Less than 2.0% of mass 69	248	0.35	(0.78) <sup>a</sup> Pass
69	Mass 69 relative abundance	31872	44.4	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	42872	59.7	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	71781	100.0	Pass
199	5.0 - 9.0% of mass 198	4868	6.78	Pass
275	10.0 - 30.0% of mass 198	17672	24.6	Pass
365	1.0 - 100.0% of mass 198	2693	3.75	Pass
441	Present, but less than mass 443	7994	11.1	(87.1) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	47919	66.8	Pass
443	17.0 - 23.0% of mass 442	9176	12.8	(19.1) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E3E3325-IC3325	3E76382.D	09/30/15	10:36	00:12	Initial cal 100
E3E3325-IC3325	3E76383.D	09/30/15	11:02	00:38	Initial cal 80
E3E3325-IC3325	3E76384.D	09/30/15	11:28	01:04	Initial cal 50
E3E3325-IC3325	3E76385.D	09/30/15	11:54	01:30	Initial cal 25
E3E3325-IC3325	3E76386.D	09/30/15	12:20	01:56	Initial cal 10
E3E3325-IC3325	3E76387.D	09/30/15	12:46	02:22	Initial cal 5
E3E3325-IC3325	3E76388.D	09/30/15	13:12	02:48	Initial cal 2
E3E3325-IC3325	3E76389.D	09/30/15	13:38	03:14	Initial cal 1
E3E3325-ICV3323	3E76391.D	09/30/15	14:29	04:05	Initial cal verification 50
E3E3325-ICV3323	3E76392.D	09/30/15	14:55	04:31	Initial cal verification 50
E3E3325-ICV3325	3E76392A.D	09/30/15	14:55	04:31	Initial cal verification 50
E3E3325-ICV3323	3E76393.D	09/30/15	15:21	04:57	Initial cal verification 50
E3E3325-ICV3325	3E76393A.D	09/30/15	15:21	04:57	Initial cal verification 50
E3E3325-ICV3323	3E76394.D	09/30/15	15:47	05:23	Initial cal verification 50
E3E3325-ICV3325	3E76395.D	09/30/15	16:12	05:48	Initial cal verification 50
E3E3325-ICV3325	3E76396.D	09/30/15	16:38	06:14	Initial cal verification 50

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E3E3326-DFTPP	Injection Date:	09/30/15
Lab File ID:	3E76399.D	Injection Time:	17:37
Instrument ID:	GCMS3E		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	33041	40.2	Pass
68	Less than 2.0% of mass 69	511	0.62	(1.51) <sup>a</sup> Pass
69	Mass 69 relative abundance	33874	41.3	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	47490	57.8	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	82093	100.0	Pass
199	5.0 - 9.0% of mass 198	5269	6.42	Pass
275	10.0 - 30.0% of mass 198	20133	24.5	Pass
365	1.0 - 100.0% of mass 198	3218	3.92	Pass
441	Present, but less than mass 443	9626	11.7	(81.6) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	61342	74.7	Pass
443	17.0 - 23.0% of mass 442	11799	14.4	(19.2) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E3E3326-ICV3323	3E76400.D	09/30/15	17:51	00:14	Initial cal verification 50

# Instrument Performance Check (DFTPP)

Page 1 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E3E3375-DFTPP	Injection Date:	11/02/15
Lab File ID:	3E77538.D	Injection Time:	22:07
Instrument ID:	GCMS3E		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	36483	45.2	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
69	Mass 69 relative abundance	42023	52.1	Pass
70	Less than 2.0% of mass 69	286	0.35	(0.68) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	46432	57.6	Pass
197	Less than 1.0% of mass 198	376	0.47	Pass
198	Base peak, 100% relative abundance	80632	100.0	Pass
199	5.0 - 9.0% of mass 198	5406	6.70	Pass
275	10.0 - 30.0% of mass 198	23356	29.0	Pass
365	1.0 - 100.0% of mass 198	3894	4.83	Pass
441	Present, but less than mass 443	10395	12.9	(89.2) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	59373	73.6	Pass
443	17.0 - 23.0% of mass 442	11660	14.5	(19.6) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E3E3375-CC3323	3E77539.D	11/02/15	22:19	00:12	Continuing cal 25
E3E3375-CC3325	3E77540.D	11/02/15	22:45	00:38	Continuing cal 25
OP88470-MB1	3E77542.D	11/02/15	23:46	01:39	Method Blank
OP88470-BS1	3E77543.D	11/03/15	00:12	02:05	Blank Spike
OP88596-MB1	3E77544.D	11/03/15	00:37	02:30	Method Blank
OP88596-BS1	3E77545.D	11/03/15	01:03	02:56	Blank Spike
OP88596-BS13	3E77546.D	11/03/15	01:29	03:22	Blank Spike
ZZZZZZ	3E77547.D	11/03/15	01:55	03:48	(unrelated sample)
JC7098-1	3E77548.D	11/03/15	02:21	04:14	(used for QC only; not part of job JC7097)
ZZZZZZ	3E77549.D	11/03/15	02:47	04:40	(unrelated sample)
ZZZZZZ	3E77550.D	11/03/15	03:12	05:05	(unrelated sample)
ZZZZZZ	3E77551.D	11/03/15	03:38	05:31	(unrelated sample)
ZZZZZZ	3E77552.D	11/03/15	04:04	05:57	(unrelated sample)
ZZZZZZ	3E77553.D	11/03/15	04:30	06:23	(unrelated sample)
ZZZZZZ	3E77554.D	11/03/15	04:55	06:48	(unrelated sample)
ZZZZZZ	3E77555.D	11/03/15	05:21	07:14	(unrelated sample)
ZZZZZZ	3E77556.D	11/03/15	05:47	07:40	(unrelated sample)
OP88470-MSD	3E77558.D	11/03/15	06:38	08:31	Matrix Spike Duplicate
OP88470-MS	3E77559.D	11/03/15	07:04	08:57	Matrix Spike

# Instrument Performance Check (DFTPP)

Page 2 of 2

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E3E3375-DFTPP	Injection Date:	11/02/15
Lab File ID:	3E77538.D	Injection Time:	22:07
Instrument ID:	GCMS3E		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	3E77561.D	11/03/15	07:55	09:48	(unrelated sample)
OP88596-MS	3E77562.D	11/03/15	08:21	10:14	Matrix Spike
OP88596-MSD	3E77563.D	11/03/15	08:47	10:40	Matrix Spike Duplicate

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Sample:	E3E3377-DFTPP	Injection Date:	11/03/15
Lab File ID:	3E77593.D	Injection Time:	23:03
Instrument ID:	GCMS3E		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	40471	42.9	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
69	Mass 69 relative abundance	45547	48.3	Pass
70	Less than 2.0% of mass 69	435	0.46	(0.96) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	54037	57.3	Pass
197	Less than 1.0% of mass 198	493	0.52	Pass
198	Base peak, 100% relative abundance	94253	100.0	Pass
199	5.0 - 9.0% of mass 198	6168	6.54	Pass
275	10.0 - 30.0% of mass 198	26192	27.8	Pass
365	1.0 - 100.0% of mass 198	4218	4.48	Pass
441	Present, but less than mass 443	12516	13.3	(95.0) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	68858	73.1	Pass
443	17.0 - 23.0% of mass 442	13172	14.0	(19.1) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E3E3377-CC3323	3E77594.D	11/03/15	23:27	00:24	Continuing cal 25
E3E3377-CC3325	3E77595.D	11/03/15	23:58	00:55	Continuing cal 25
ZZZZZZ	3E77597.D	11/04/15	00:51	01:48	(unrelated sample)
ZZZZZZ	3E77598.D	11/04/15	01:17	02:14	(unrelated sample)
ZZZZZZ	3E77599.D	11/04/15	01:43	02:40	(unrelated sample)
ZZZZZZ	3E77600.D	11/04/15	02:09	03:06	(unrelated sample)
ZZZZZZ	3E77602.D	11/04/15	03:01	03:58	(unrelated sample)
JC7097-2	3E77603.D	11/04/15	03:27	04:24	MH386-2-20151026(3')
JC7097-4	3E77604.D	11/04/15	03:52	04:49	MH386-4-20151026(3')
JC7097-5	3E77605.D	11/04/15	04:18	05:15	MH386-5-20151026(3')
ZZZZZZ	3E77606.D	11/04/15	04:44	05:41	(unrelated sample)
ZZZZZZ	3E77607.D	11/04/15	05:10	06:07	(unrelated sample)
ZZZZZZ	3E77608.D	11/04/15	05:36	06:33	(unrelated sample)
ZZZZZZ	3E77609.D	11/04/15	06:01	06:58	(unrelated sample)
JC7097-3	3E77610.D	11/04/15	06:27	07:24	MH386-3-20151026(3')
JC7097-1	3E77611.D	11/04/15	06:53	07:50	MH386-1-20151026(3')
ZZZZZZ	3E77612.D	11/04/15	07:19	08:16	(unrelated sample)
ZZZZZZ	3E77613.D	11/04/15	07:44	08:41	(unrelated sample)
ZZZZZZ	3E77614.D	11/04/15	08:10	09:07	(unrelated sample)

# Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E2M3443-CC3440				Injection Date:		11/05/15					
Lab File ID:	2M78928.D				Injection Time:		10:09					
Instrument ID:	GCMS2M				Method:		SW846 8270D					

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	IS 6 AREA						
Check Std	135277	4.98	501082	6.13	288747	8.26	499920	10.45	537409	14.64	475115	16.76
Upper Limit <sup>a</sup>	270554	5.48	1002164	6.63	577494	8.76	999840	10.95	1074818	15.14	950230	17.26
Lower Limit <sup>b</sup>	67639	4.48	250541	5.63	144374	7.76	249960	9.95	268705	14.14	237558	16.26

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	IS 6 AREA						
OP88530-MB1	162924	4.98	618031	6.13	335767	8.26	579193	10.45	534623	14.64	449794	16.76
ZZZZZZ	149335	4.98	536334	6.13	300318	8.26	527898	10.45	557703	14.64	542234	16.78
OP81205-MB1R	151823	4.98	555987	6.13	316360	8.26	558218	10.45	564211	14.64	512476	16.76
OP81205-BS1R	158854	4.99	653465	6.13	317438	8.26	548545	10.45	549227	14.64	505317	16.76
OP81205-BS2R	150727	4.99	613376	6.13	297587	8.26	507732	10.45	513729	14.64	475509	16.76
OP81205-BS3R	161426	4.98	641440	6.13	321613	8.26	544224	10.45	553141	14.64	500982	16.76
OP81205-BS4R	150199	4.98	607190	6.13	308896	8.26	535629	10.45	554690	14.64	501758	16.76
OP81205-MB1Q	155915	4.98	566038	6.12	318414	8.26	564368	10.45	567376	14.64	510462	16.76
OP81205-BS1Q	153866	4.99	620286	6.13	300255	8.26	515411	10.45	519812	14.64	483737	16.76
OP81205-BS2Q	163412	4.99	677045	6.13	326308	8.26	557325	10.45	561695	14.64	513584	16.76
OP81205-BS3Q	153302	4.99	616814	6.13	305445	8.26	525585	10.45	545198	14.64	500339	16.76
OP81205-BS4Q	155116	4.99	625558	6.13	304919	8.26	519237	10.45	531082	14.64	479944	16.76
OP81205-MB1P	146758	4.98	525087	6.12	291295	8.25	512077	10.45	516262	14.64	462220	16.76
OP81205-BS1P	142359	4.98	575586	6.13	281506	8.26	489304	10.45	504926	14.64	450977	16.76
OP81205-BS2P	146304	4.98	596915	6.13	295806	8.26	514282	10.45	524740	14.64	472641	16.76
OP81205-BS3P	134907	4.98	557967	6.13	283370	8.26	491870	10.45	502418	14.64	447231	16.76
OP81205-BS4P	136952	4.98	550198	6.13	273532	8.26	473604	10.45	484757	14.64	431817	16.76
OP88470-MB1	172667	4.98	607041	6.12	329088	8.26	549585	10.45	518600	14.64	459675	16.76
JC7097-1 <sup>c</sup>	136852	4.98	487028	6.13	284121	8.26	510509	10.45	559579	14.64	512458	16.76
JC7097-3 <sup>c</sup>	155009	4.98	566469	6.13	309620	8.26	533981	10.45	565056	14.64	537205	16.76
ZZZZZZ	163585	4.98	580084	6.13	311262	8.26	540323	10.45	590358	14.64	580911	16.77
ZZZZZZ	169626	4.98	546692	6.13	260496	8.28	464121	10.47	564444	14.67	563671	16.82

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

(c) Confirmation run for internal standard areas.

# Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E3E3375-CC3323				Injection Date:		11/02/15					
Lab File ID:	3E77539.D				Injection Time:		22:19					
Instrument ID:	GCMS3E				Method:		SW846 8270D					

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	97798	4.67	374968	5.75	233892	7.82	389279	10.00	386890	14.20	342094	16.33
Upper Limit <sup>a</sup>	195596	5.17	749936	6.25	467784	8.32	778558	10.50	773780	14.70	684188	16.83
Lower Limit <sup>b</sup>	48899	4.17	187484	5.25	116946	7.32	194640	9.50	193445	13.70	171047	15.83

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
OP88470-MB1	97594	4.66	377439	5.75	222897	7.82	359193	10.00	353432	14.19	319489	16.32
OP88470-BS1	95823	4.67	380603	5.75	219927	7.82	352124	10.00	350998	14.19	301642	16.32
OP88596-MB1	97699	4.66	381056	5.75	221393	7.82	352372	10.00	331470	14.19	294775	16.31
OP88596-BS1	85065	4.66	335345	5.75	198674	7.82	318826	10.00	311807	14.19	277866	16.31
OP88596-BS13	86567	4.66	341868	5.75	202260	7.81	321579	9.99	315140	14.18	288848	16.31
ZZZZZZ	90556	4.66	343831	5.75	199999	7.81	303064	9.99	237035	14.19	218106	16.32
JC7098-1	91125	4.66	354801	5.75	197049	7.81	293496	9.99	254211	14.18	249731	16.31
ZZZZZZ	91370	4.66	347095	5.75	192614	7.82	269147	10.00	232149	14.18	227853	16.31
ZZZZZZ	89451	4.66	362957	5.75	177282	7.86	223610	10.02	208925	14.18	222799	16.31
ZZZZZZ	98486	4.66	397999	5.75	198569	7.86	243101	10.02	218472	14.18	235521	16.31
ZZZZZZ	88000	4.66	362657	5.76	174819	7.84	229468	10.01	194012	14.19	203855	16.31
ZZZZZZ	88451	4.66	344156	5.75	172697	7.82	252838	9.99	220446	14.18	223680	16.31
ZZZZZZ	94209	4.66	358867	5.75	196104	7.82	283480	9.99	242317	14.18	239255	16.31
ZZZZZZ	78157	4.66	303125	5.75	156114	7.82	217674	10.00	179378*	14.19	184000	16.31
ZZZZZZ	76616	4.66	307746	5.75	185353	7.81	302492	9.98	283424	14.18	247882	16.30
OP88470-MSD	90610	4.66	354878	5.75	192223	7.82	284127	9.99	253948	14.19	244466	16.31
OP88470-MS	86381	4.66	333459	5.75	177552	7.81	263892	9.99	225881	14.18	213459	16.31
ZZZZZZ	12128*	4.66	47535*	5.75	28131*	7.81	47108*	9.98	46548*	14.17	45600*	16.30
OP88596-MS	82376	4.66	326063	5.75	188656	7.81	307455	9.99	299143	14.18	257114	16.30
OP88596-MSD	78280	4.66	314267	5.75	184416	7.81	292982	9.98	278682	14.18	247964	16.30

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E3E3377-CC3323				Injection Date:		11/03/15					
Lab File ID:	3E77594.D				Injection Time:		23:27					
Instrument ID:	GCMS3E				Method:		SW846 8270D					

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	117529	4.72	446534	5.81	270936	7.89	433364	10.07	442939	14.27	420044	16.40
Upper Limit <sup>a</sup>	235058	5.22	893068	6.31	541872	8.39	866728	10.57	885878	14.77	840088	16.90
Lower Limit <sup>b</sup>	58765	4.22	223267	5.31	135468	7.39	216682	9.57	221470	13.77	210022	15.90
Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
ZZZZZZ	80722	4.72	310051	5.81	178707	7.89	274407	10.07	297936	14.26	309577	16.39
ZZZZZZ	83041	4.72	316848	5.81	184633	7.89	284783	10.07	291365	14.26	290983	16.39
ZZZZZZ	81952	4.72	311195	5.81	180473	7.89	264126	10.07	288149	14.27	298270	16.39
ZZZZZZ	80786	4.72	315104	5.81	181640	7.89	284868	10.07	265361	14.27	265378	16.40
ZZZZZZ	83948	4.72	321084	5.81	187541	7.89	293450	10.07	255996	14.27	236426	16.40
JC7097-2 <sup>c</sup>	89483	4.72	341034	5.81	200146	7.89	292668	10.07	258350	14.27	249586	16.40
JC7097-4	90682	4.72	342768	5.81	205294	7.89	330388	10.07	326390	14.27	296912	16.40
JC7097-5 <sup>c</sup>	85516	4.72	321591	5.81	185876	7.89	257852	10.08	231756	14.27	232598	16.40
ZZZZZZ	100152	4.72	368566	5.81	207710	7.89	318459	10.07	299852	14.27	293200	16.40
ZZZZZZ	93357	4.72	353520	5.81	208592	7.89	343557	10.06	338407	14.26	319098	16.40
ZZZZZZ	81871	4.72	320854	5.82	176194	7.89	242013	10.08	202724*	14.28	200494*	16.41
ZZZZZZ	84914	4.72	320104	5.82	171012	7.90	238857	10.08	199800*	14.28	200166*	16.42
JC7097-3 <sup>c</sup>	79518	4.72	308328	5.81	170669	7.89	254280	10.08	206889*	14.28	203952*	16.41
JC7097-1 <sup>c</sup>	76446	4.72	292218	5.82	164644	7.89	226549	10.08	195124*	14.28	195045*	16.41
ZZZZZZ	80881	4.72	310213	5.82	176094	7.89	251192	10.08	209629*	14.28	204644*	16.42
ZZZZZZ	87959	4.72	349977	5.82	194077	7.94	266469	10.13	221186*	14.36	222460	16.51
ZZZZZZ	77750	4.72	296147	5.82	164238	7.91	286163	10.11	223018	14.40	190405*	16.53

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

(c) Elevated detection limit due to low volume of bad matrix sample extracted.

# Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

Method: SW846 8270D

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JC7097-1	2M78949.D	65	65	83	64	73	75
JC7097-1	3E77611.D	69	70	95	84	82	85
JC7097-2	3E77603.D	74	73	87	79	77	81
JC7097-3	2M78950.D	72	70	83	69	75	77
JC7097-3	3E77610.D	76	77	99	95	86	90
JC7097-4	3E77604.D	74	72	85	90	77	80
JC7097-5	3E77605.D	71	70	89	88	74	80
OP88470-BS1	3E77543.D	82	87	99	95	87	92
OP88470-MB1	3E77542.D	89	88	98	108	94	90
OP88470-MB1	2M78948.D	82	79	90	83	86	87
OP88470-MS	3E77559.D	72	76	86	90	79	82
OP88470-MSD	3E77558.D	76	79	92	90	78	83

Surrogate  
Compounds

Recovery  
Limits

S1 = 2-Fluorophenol	30-106%
S2 = Phenol-d5	30-106%
S3 = 2,4,6-Tribromophenol	24-140%
S4 = Nitrobenzene-d5	26-122%
S5 = 2-Fluorobiphenyl	36-112%
S6 = Terphenyl-d14	36-132%

**Initial Calibration Summary**

Job Number: JC7097

Sample: E2M3440-ICC3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78900.D

Project: Sunoco - Marcus Hook Facility, PA

## Response Factor Report MS

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)

Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um

Last Update : Wed Nov 04 17:14:43 2015

Response via : Initial Calibration

## Calibration Files

2 =2m78896.D	5 =2m78897.D	25 =2m78899.D	80 =2m78901.D
100 =2m78902.D	50 =2m78900.D	1 =2m78895.D	10 =2m78898.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
<hr/>										
1) I 1,4-Dichlorobenzene-d							-----ISTD-----			
2) 1,4-Dioxane	0.963	1.140	0.904	0.891	0.872	0.897	1.159	0.897	0.965	12.07
3) Pyridine	2.579	2.843	2.400	2.315	2.308	2.310	2.626	2.372	2.469	7.90
4) N-Nitrosodim	1.657	1.898	1.473	1.508	1.501	1.454	1.604	1.524	1.577	9.26
5) 2-Fluorophen	1.802	2.045	1.713	1.651	1.631	1.655	1.932	1.701	1.766	8.49
6) Indene	3.148	3.642	2.908	2.600	2.547	2.773	3.105	2.988	2.964	11.82
7) Cumene	4.891	5.452	4.497	4.245	4.183	4.293	5.137	4.494	4.649	9.94
8) Phenol-d5	2.628	2.974	2.486	2.406	2.376	2.405	2.642	2.430	2.543	7.92
9) Phenol	2.923	3.120	2.597	2.636	2.623	2.664	2.760	2.602	2.741	6.87
10) Aniline	3.274	3.800	3.184	3.029	2.982	3.070	3.443	3.171	3.244	8.27
11) bis(2-Chloro	2.134	2.434	1.923	1.855	1.862	1.843	2.239	2.014	2.038	10.52
12) 2-Chlorophen	1.656	1.865	1.528	1.418	1.394	1.476	1.663	1.535	1.567	9.91
13) Decane	1.671	1.771	1.407	1.216	1.153	1.287	1.590	1.454	1.444	15.32
14) 1,3-Dichloro	1.738	1.998	1.595	1.487	1.462	1.497	1.730	1.632	1.642	10.88
15) 1,4-Dichloro	1.744	1.991	1.593	1.500	1.466	1.518	1.778	1.633	1.653	10.69
16) Benzyl alcoh	1.130	1.362	1.154	1.088	1.102	1.118	1.260	1.153	1.171	7.98
17) 1,2-Dichloro	1.701	1.897	1.460	1.381	1.345	1.413	1.745	1.541	1.561	12.78
18) Acetophenone	2.703	3.127	2.498	2.222	2.125	2.347	2.846	2.585	2.557	13.03
19) 2-Methylphen	1.721	2.006	1.624	1.547	1.533	1.566	1.720	1.629	1.668	9.24
20) 2,2'-oxybis(	2.111	2.393	1.744	1.513	1.426	1.583	2.229	1.925	1.865	19.07
21) 3&4-Methylph	1.840	2.122	1.711	1.568	1.518	1.622	1.812	1.747	1.743	10.95
22) n-Nitroso-di	1.837	2.046	1.578	1.476	1.416	1.509	1.822	1.706	1.674	12.98
23) Hexachloroet	0.586	0.658	0.523	0.500	0.487	0.500	0.584	0.525	0.545	10.80
24) I Naphthalene-d8							-----ISTD-----			
25) Nitrobenzene	0.640	0.705	0.654	0.550	0.540	0.620	0.663	0.575	0.618	9.41
26) Nitrobenzene	0.630	0.735	0.596	0.545	0.534	0.570	0.663	0.597	0.609	10.89
27) Quinoline	0.836	0.964	0.802	0.730	0.722	0.763	0.873	0.783	0.809	9.95
28) Isophorone	1.128	1.265	1.070	1.010	0.986	1.035	1.139	1.050	1.085	8.30
29) 2-Nitropheno	0.200	0.240	0.212	0.193	0.193	0.200	0.223	0.196	0.207	8.06
30) 2,4-Dimethyl	0.494	0.582	0.483	0.443	0.435	0.461	0.524	0.479	0.488	9.73
31) Benzoic acid		0.325	0.335	0.364	0.366	0.352		0.274	0.336	10.13
32) bis(2-Chloro	0.652	0.755	0.602	0.571	0.563	0.568	0.673	0.615	0.625	10.60
33) 2,4-Dichloro	0.306	0.375	0.311	0.289	0.284	0.302	0.323	0.305	0.312	9.14
34) 2,6-Dichloro	0.314	0.371	0.302	0.277	0.273	0.287	0.320	0.302	0.306	10.26
35) 1,3,5-Trichl	0.391	0.451	0.361	0.324	0.314	0.341	0.434	0.356	0.372	13.48
36) 1,2,4-Trichl	0.355	0.439	0.346	0.317	0.312	0.324	0.415	0.351	0.357	12.92
37) 1,2,3-Trichl	0.355	0.419	0.334	0.304	0.296	0.315	0.387	0.337	0.343	12.26
38) Naphthalene	1.417	1.666	1.184	1.207	1.181	1.116	1.494	1.336	1.325	14.32
39) 4-Chloroanil	0.524	0.609	0.501	0.459	0.446	0.479	0.530	0.504	0.507	10.03
40) 2,3-Dichloro	0.402	0.461	0.381	0.348	0.340	0.363	0.414	0.379	0.386	10.23
41) Caprolactam	0.171	0.212	0.182	0.169	0.167	0.173	0.182	0.174	0.179	8.16
42) Hexachlororobu	0.228	0.249	0.205	0.189	0.186	0.199	0.238	0.206	0.212	10.86
43) 4-Chloro-3-m	0.406	0.483	0.417	0.393	0.389	0.405	0.440	0.401	0.417	7.45
44) 2-Methylnaph	0.662	0.756	0.627	0.579	0.560	0.597	0.673	0.625	0.635	9.84
45) 1-Methylnaph	0.682	0.788	0.657	0.591	0.578	0.614	0.705	0.643	0.657	10.40

**Initial Calibration Summary**

Job Number: JC7097

Sample: E2M3440-ICC3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78900.D

Project: Sunoco - Marcus Hook Facility, PA

46)	Dimethylnaph	0.722	0.847	0.715	0.643	0.627	0.677	0.759	0.703	0.712	9.78
47)	I Acenaphthene-d10						-----ISTD-----				
48)	Hexachlorocyclo	0.358	0.452	0.415	0.401	0.393	0.412	0.350	0.385	0.396	8.27
49)	2,4,6-Trichloro	0.395	0.477	0.409	0.371	0.361	0.397	0.406	0.389	0.401	8.72
50)	2,4,5-Trichloro	0.447	0.530	0.428	0.406	0.399	0.414	0.437	0.430	0.436	9.41
51)	2-Fluorobiphenyl	1.553	1.772	1.599	1.313	1.291	1.519	1.550	1.434	1.504	10.43
52)	2-Chloronaphthalene	1.288	1.517	1.217	1.106	1.076	1.161	1.364	1.214	1.243	11.65
53)	Biphenyl	1.694	2.048	1.676	1.495	1.461	1.594	1.848	1.643	1.682	11.35
54)	2-Nitroaniline	0.465	0.564	0.490	0.460	0.458	0.482	0.491	0.460	0.484	7.28
55)	Dimethylphthalate	1.423	1.654	1.320	1.246	1.232	1.248	1.473	1.341	1.367	10.58
56)	Acenaphthylene	2.440	2.823	2.091	2.177	2.118	2.016	2.506	2.335	2.313	11.64
57)	2,6-Dinitrotoluene	0.270	0.348	0.299	0.289	0.285	0.298	0.287	0.287	0.295	7.82
58)	3-Nitroaniline	0.337	0.429	0.372	0.346	0.344	0.363	0.323	0.350	0.358	8.99
59)	Acenaphthene	1.499	1.725	1.260	1.316	1.261	1.212	1.487	1.402	1.395	12.25
60)	2,4-Dinitrotoluene	0.093	0.150	0.185	0.207	0.211	0.206	0.098	0.134	0.161	30.34
							----- Quadratic regression -----		Coefficient =		0.9994
							Response Ratio = -0.01506 + 0.19998 *A + 0.00277 *A^2				
61)	4-Nitrophenoxy	0.201	0.249	0.233	0.227	0.226	0.237	0.209	0.215	0.225	6.92
62)	Dibenzofuran	1.908	2.204	1.794	1.650	1.613	1.715	1.949	1.784	1.827	10.47
63)	2,4-Dinitrotoluene	0.368	0.471	0.417	0.390	0.381	0.402	0.391	0.391	0.401	7.87
64)	2,3,4,6-Tetrahydrophthalic anhydride	0.330	0.418	0.366	0.359	0.355	0.371	0.350	0.342	0.361	7.26
65)	Diethylphthalate	1.411	1.700	1.385	1.303	1.279	1.321	1.488	1.405	1.412	9.57
66)	Fluorene	1.736	2.002	1.475	1.495	1.450	1.418	1.771	1.653	1.625	12.51
67)	4-Chlorophenol	0.787	0.931	0.738	0.680	0.655	0.710	0.833	0.766	0.763	11.67
68)	4-Nitroaniline	0.351	0.444	0.383	0.363	0.361	0.375	0.372	0.369	0.377	7.61
69)	I Phenanthrene-d10						-----ISTD-----				
70)	4,6-Dinitrophenol	0.110	0.133	0.141	0.142	0.141		0.100	0.128		14.34
71)	n-Nitrosodiphenylamine	0.605	0.722	0.612	0.571	0.563	0.586	0.627	0.603	0.611	8.11
72)	1,2-Diphenylbenzene	1.223	1.372	1.181	1.075	1.059	1.134	1.185	1.163	1.174	8.31
73)	2,4,6-Tribromophenol	0.105	0.119	0.115	0.113	0.113	0.115	0.082	0.100	0.108	11.02
74)	4-Bromophenylbenzene	0.251	0.285	0.237	0.230	0.228	0.233	0.264	0.232	0.245	8.24
75)	Hexachlorobenzene	0.280	0.316	0.263	0.248	0.246	0.250	0.297	0.247	0.268	9.89
76)	Pentachlorobenzene	0.113	0.164	0.164	0.156	0.153	0.165	0.127	0.141	0.148	12.97
77)	Phenanthrene	1.368	1.549	1.166	1.179	1.160	1.106	1.416	1.265	1.276	12.09
78)	Anthracene	1.344	1.566	1.193	1.221	1.187	1.144	1.342	1.285	1.285	10.52
79)	Carbazole	1.134	1.295	1.138	1.040	1.019	1.096	1.176	1.073	1.121	7.81
80)	Di-n-butylphthalate	1.304	1.552	1.325	1.245	1.238	1.280	1.326	1.281	1.319	7.56
81)	Fluoranthene	1.515	1.754	1.355	1.416	1.391	1.302	1.638	1.452	1.478	10.27
82)	Octadecane	0.576	0.670	0.594	0.513	0.495	0.561	0.598	0.571	0.572	9.42
83)	I Chrysene-d12						-----ISTD-----				
84)	Pyrene	1.540	1.764	1.354	1.396	1.355	1.290	1.594	1.434	1.466	10.70
85)	Terphenyl-d1	0.946	1.017	0.958	0.828	0.813	0.935	1.035	0.823	0.919	9.59
86)	Butylbenzylphthalate	0.518	0.618	0.531	0.524	0.514	0.521	0.561	0.497	0.535	7.05
87)	Butyl stearate	0.302	0.389	0.381	0.321	0.313	0.367	0.326	0.314	0.339	10.13
88)	Benzo[a]anthracene	1.506	1.689	1.261	1.291	1.242	1.220	1.723	1.320	1.407	14.58
89)	3,3'-Dichlorobiphenyl	0.342	0.431	0.424	0.400	0.390	0.427	0.356	0.354	0.391	9.24
90)	Chrysene	1.455	1.601	1.215	1.277	1.233	1.166	1.607	1.303	1.357	12.86
91)	bis(2-Ethylhexyl)phthalate	0.721	0.813	0.709	0.700	0.694	0.705	0.803	0.677	0.728	7.04
92)	I Perylene-d12						-----ISTD-----				
93)	Di-n-octylphthalate	1.339	1.485	1.367	1.391	1.370	1.389	1.438	1.234	1.377	5.32
94)	Benzo[b]fluoranthene	1.615	1.758	1.423	1.455	1.445	1.396	1.854	1.444	1.549	11.22
95)	Benzo[k]fluoranthene	1.517	1.651	1.279	1.343	1.274	1.266	1.646	1.386	1.420	11.48
96)	Benzo[a]pyrene	1.343	1.504	1.195	1.291	1.285	1.187	1.439	1.231	1.309	8.70
97)	Indeno[1,2,3]fluoranthene	1.298	1.393	1.112	1.289	1.296	1.137	1.363	1.167	1.257	8.38
98)	Dibenz(a,h)anthracene	0.941	1.075	1.002	0.981	0.984	1.011	0.998	0.897	0.986	5.27

## Initial Calibration Summary

Page 3 of 3

Job Number: JC7097

Sample: E2M3440-ICC3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78900.D

Project: Sunoco - Marcus Hook Facility, PA

---

99)	Dibenz[a,h]a	1.282	1.465	1.165	1.297	1.300	1.163	1.417	1.211	1.287	8.56
100)	7,12-Dimethy	0.594	0.675	0.642	0.576	0.560	0.631	0.641	0.575	0.612	6.74
101)	Benzo[g,h,i]	1.326	1.450	1.154	1.282	1.278	1.147	1.409	1.179	1.278	8.93

---

(#) = Out of Range    ###    Number of calibration levels exceeded format    ###

M2M3440.M

Wed Nov 04 17:14:56 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: E2M3440-ICV3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78904.D

Project: Sunoco - Marcus Hook Facility, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\e2m3440\2m78904.D Vial: 11  
 Acq On : 4 Nov 2015 5:37 pm Operator: ashley  
 Sample : icv3440-50 Inst : MS  
 Misc : op88434,e2m3440, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 17:20:51 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	116	0.00
3 t	Pyridine	2.469	3.107	-25.8	156	0.08
10	Aniline	3.244	3.557	-9.6	135	0.00
16 t	Benzyl alcohol	1.171	1.397	-19.3	145	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	123	0.00
39 t	4-Chloroaniline	0.507	0.500	1.4	129	0.00
44 t	2-Methylnaphthalene	0.635	0.688	-8.3	142	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	128	0.00
54 t	2-Nitroaniline	0.484	0.520	-7.4	137	0.00
58 t	3-Nitroaniline	0.358	0.375	-4.7	132	0.00
62 t	Dibenzofuran	1.827	1.900	-4.0	141	0.00
68 t	4-Nitroaniline	0.377	0.377	0.0	128	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	130	0.00
79 t	Carbazole	1.121	1.162	-3.7	138	0.00

(#) = Out of Range  
 2m78858a.D M2M3440.M

SPCC's out = 0 CCC's out = 0  
 Wed Nov 04 18:03:21 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: E2M3440-ICV3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78907.D

Project: Sunoco - Marcus Hook Facility, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\e2m3440\2m78907.D Vial: 14  
 Acq On : 4 Nov 2015 6:04 pm Operator: ashley  
 Sample : icv3440-50 Inst : MS  
 Misc : op88434,e2m3440, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 17:20:51 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	125	0.00 4.99
5 S	2-Fluorophenol	1.766	1.577	10.7	119	0.00 3.99
8 S	Phenol-d5	2.543	2.225	12.5	116	0.00 4.69
24 I	Naphthalene-d8	1.000	1.000	0.0	124	0.00 6.13
25 S	Nitrobenzene-d5	0.618	0.555	10.2	111	0.00 5.44
47 I	Acenaphthene-d10	1.000	1.000	0.0	120	0.00 8.26
51 S	2-Fluorobiphenyl	1.504	1.393	7.4	110	0.00 7.36
69 I	Phenanthrene-d10	1.000	1.000	0.0	115	0.00 10.45
73 S	2,4,6-Tribromophenol	0.108	0.100	7.4	100	0.00 9.39
83 I	Chrysene-d12	1.000	1.000	0.0	105	0.00 14.64
85 S	Terphenyl-d14	0.919	0.872	5.1	98	0.00 13.00

(#) = Out of Range  
 2m78858a.D M2M3440.M

SPCC's out = 0 CCC's out = 0  
 Wed Nov 04 18:32:39 2015

## Initial Calibration Summary

Page 1 of 1

**Job Number:** JC7097

**Sample:** E2M3441-ICC3441

**Account:** SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78915.D

## **Project: Sunoco - Marcus Hook Facility, PA**

## Response Factor Report MS

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)

Title : Semi Volatile GC/MS, rxi 5sil ms 30m .25mm .25um

Last Update : Wed Nov 04 22:59:01 2015

Response via : Initial Calibration

## Calibration Files

Calibration files  
2 =m78914.D 5 =m78916.D 25 =m78917.D 80 =m78913.D  
100 =m78911.D 50 =m78915.D 1 =m78912.D 10 =m78918.D

Compound 2 5 25 80 100 50 1 10 Avg. % RSD

102) 1,4-Dichlorobenzene-d -----ISTD-----  
103) Benzaldehyde 1.821 1.279 1.368 1.317 1.247 1.324 1.628 1.421 1.426 13.94

104) Acenaphthene-d10a -----ISTD-----  
 105) 1,2,4,5-Tetr 0.721 0.535 0.580 0.571 0.556 0.572 0.622 0.593 0.594 9.

106)	Chrysene-d12a	-----ISTD-----									
107)	Benzidine	0.431	0.414	0.385	0.424	0.319	0.395	11.57			
108)	1-chloroocta	0.341	0.274	0.326	0.320	0.307	0.325	0.297	0.327	0.314	6.77

109)	Phenanthrene-d10a	-----ISTD-----
110)	Atrazine	0.120 0.081 0.107 0.117 0.116 0.113 0.096 0.098 0.106 12.54
111)	o-terphenyl	0.678 0.527 0.592 0.609 0.581 0.606 0.622 0.600 0.602 7.00

112) Naphthalene-d8a -----ISTD-----  
 113) Hydroquinone 0.356 0.408 0.417 0.379 0.259 0.364 17.37

(#) = Out of Range   ### Number of calibration levels exceeded format   ###

M2M3440.M

Thu Nov 05 09:03:47 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: E2M3441-ICV3440

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 2M78920.D

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\e2m3441\2m78920.D Vial: 11  
 Acq On : 4 Nov 2015 11:26 pm Operator: sarad  
 Sample : icv3440-50 Inst : MS  
 Misc : op88434,e2m3441, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 22:59:01 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	106	0.00	4.99
4 t	N-Nitrosodimethylamine	1.577	1.264	19.8	92	0.01	2.85
11 t	bis(2-Chloroethyl)ether	2.038	1.743	14.5	100	0.00	4.77
14 t	1,3-Dichlorobenzene	1.642	1.413	13.9	100	0.00	4.94
15 t	1,4-Dichlorobenzene	1.653	1.404	15.1	98	0.00	5.00
17 t	1,2-Dichlorobenzene	1.561	1.346	13.8	101	0.00	5.13
20 t	2,2'-oxybis(1-Chloropropylamin	1.865	1.607	13.8	108	0.00	5.20
22 t	n-Nitroso-di-n-propylamin	1.674	1.405	16.1	99	0.00	5.31
23 t	Hexachloroethane	0.545	0.473	13.2	100	0.00	5.41
24 I	Naphthalene-d8	1.000	1.000	0.0	105	0.00	6.13
26 t	Nitrobenzene	0.609	0.523	14.1	96	0.00	5.46
28 t	Isophorone	1.085	0.982	9.5	99	0.00	5.67
32 t	bis(2-Chloroethoxy)methan	0.625	0.556	11.0	102	0.00	5.86
36 t	1,2,4-Trichlorobenzene	0.357	0.307	14.0	99	0.00	6.07
38 t	Naphthalene	1.325	1.033	22.0	97	0.00	6.15
42 t	Hexachlorobutadiene	0.212	0.188	11.3	99	0.00	6.28
47 I	Acenaphthene-d10	1.000	1.000	0.0	102	0.00	8.26
48 t	Hexachlorocyclopentadiene	0.396	0.326	17.7	82	0.00	7.11
52 t	2-Chloronaphthalene	1.243	1.078	13.3	95	0.00	7.51
55 t	Dimethylphthalate	1.367	1.150	15.9	94	0.00	7.89
56 t	Acenaphthylene	2.313	1.717	25.8	87	0.00	8.06
57 t	2,6-Dinitrotoluene	0.295	0.252	14.6	87	0.00	7.96
59 t	Acenaphthene	1.395	1.171	16.1	99	0.00	8.30
63 t	2,4-Dinitrotoluene	0.401	0.323	19.5	82	0.00	8.53
65 t	Diethylphthalate	1.412	1.206	14.6	94	0.00	8.90
66 t	Fluorene	1.625	1.323	18.6	96	0.00	9.04
67 t	4-Chlorophenyl-phenylethe	0.763	0.655	14.2	95	0.00	9.05
69 I	Phenanthrene-d10	1.000	1.000	0.0	100	0.00	10.45
71 t	n-Nitrosodiphenylamine	0.611	0.485	20.6	83	0.00	9.23
72 t	1,2-Diphenylhydrazine	1.174	1.087	7.4	96	0.00	9.29
74 t	4-Bromophenyl-phenylether	0.245	0.215	12.2	92	0.00	9.78
75 t	Hexachlorobenzene	0.268	0.231	13.8	92	0.00	9.88
77 t	Phenanthrene	1.276	1.031	19.2	93	0.00	10.49
78 t	Anthracene	1.285	1.038	19.2	91	0.00	10.57
80 t	Di-n-butylphthalate	1.319	1.121	15.0	87	0.00	11.44
81 t	Fluoranthene	1.478	1.176	20.4	90	0.00	12.36
83 I	Chrysene-d12	1.000	1.000	0.0	97	0.00	14.65
84 t	Pyrene	1.466	1.187	19.0	89	0.00	12.71

# Initial Calibration Verification

Page 2 of 2

Job Number: JC7097

Sample: E2M3441-ICV3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78920.D

Project: Sunoco - Marcus Hook Facility, PA

86 t	Butylbenzylphthalate	0.535	0.455	15.0	85	0.00	13.83
88 t	Benzo[a]anthracene	1.407	1.089	22.6	86	0.00	14.63
90 t	Chrysene	1.357	1.027	24.3	85	0.00	14.68
91 t	bis(2-Ethylhexyl)phthalat	0.728	0.595	18.3	82	0.00	14.79
92 I	Perylene-d12	1.000	1.000	0.0	91	0.00	16.76
93 t	Di-n-octylphthalate	1.377	1.176	14.6	77	0.00	15.77
94 t	Benzo[b]fluoranthene	1.549	1.183	23.6	77	0.00	16.24
95 t	Benzo[k]fluoranthene	1.420	1.169	17.7	84	-0.01	16.27
96 t	Benzo[a]pyrene	1.309	1.076	17.8	82	0.00	16.68
97 t	Indeno[1,2,3-cd]pyrene	1.257	0.943	25.0	75	0.00	18.48
99 t	Dibenz[a,h]anthracene	1.287	1.007	21.8	79	-0.01	18.52
101 t	Benzo[g,h,i]perylene	1.278	0.983	23.1	78	-0.01	18.97

( # ) = Out of Range  
2m78915a.D M2M3440.MSPCC's out = 0 CCC's out = 0  
Thu Nov 05 00:31:33 2015

8.7.5

8

# Initial Calibration Verification

Page 1 of 1

Job Number: JC7097

Sample: E2M3441-ICV3441

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78920A.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e2m3441\2m78920a.D Vial: 11  
Acq On : 4 Nov 2015 11:26 pm Operator: sarad  
Sample : icv3441-50 Inst : MS  
Misc : op88434,e2m3441, Multiplr: 1.00  
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
Last Update : Wed Nov 04 22:59:01 2015  
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
104 Acenaphthene-d10a	1.000	1.000	0.0	92	0.00	8.26
105 1,2,4,5-Tetrachlorobenzen	0.594	0.574	3.4	92	0.00	7.12

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
2m78915a.D M2M3440.M Thu Nov 05 00:31:34 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: E2M3441-ICV3441

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78921A.D

Project: Sunoco - Marcus Hook Facility, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\e2m3441\2m78921a.D Vial: 12  
 Acq On : 4 Nov 2015 11:53 pm Operator: sarad  
 Sample : icv3441-50 Inst : MS  
 Misc : op88434,e2m3441, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 22:59:01 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102 1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	99	0.00	4.99
103 Benzaldehyde	1.426	1.368	4.1	103	0.00	4.64
109 Phenanthrene-d10a	1.000	1.000	0.0	93	0.00	10.45
110 Atrazine	0.106	0.112	-5.7	92	0.00	10.06

(#) = Out of Range  
 2m78915a.D M2M3440.M

SPCC's out = 0 CCC's out = 0  
 Thu Nov 05 00:31:36 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: E2M3441-ICV3440

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 2M78921.D

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\e2m3441\2m78921.D Vial: 12  
 Acq On : 4 Nov 2015 11:53 pm Operator: sarad  
 Sample : icv3440-50 Inst : MS  
 Misc : op88434,e2m3441, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 22:59:01 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	113	0.00
2 t	1,4-Dioxane	0.965	0.831	13.9	104	0.01
6 t	Indene	2.964	2.661	10.2	108	0.00
7 t	Cumene	4.649	4.114	11.5	108	0.00
13 t	Decane	1.444	1.245	13.8	109	0.00
18 t	Acetophenone	2.557	2.263	11.5	109	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	128	0.00
27 t	Quinoline	0.809	0.613	24.2	103	-0.01
40 t	2,3-Dichloroaniline	0.386	0.258	33.2#	91	0.00
41 t	Caprolactam	0.179	0.130	27.4	97	-0.03
45 t	1-Methylnaphthalene	0.657	0.498	24.2	104	0.00
46 t	Dimethylnaphthalene	0.712	0.543	23.7	103	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	108	0.00
53 t	Biphenyl	1.682	1.523	9.5	103	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	104	0.00
82 t	Octadecane	0.572	0.530	7.3	98	0.00
92 I	Perylene-d12	1.000	1.000	0.0	86	0.00
100 t	7,12-Dimethylbenz(a)anthr	0.612	0.554	9.5	75	-0.01

(#) = Out of Range  
 2m78915a.D M2M3440.M

SPCC's out = 0 CCC's out = 0  
 Thu Nov 05 00:31:35 2015

# Initial Calibration Verification

Page 1 of 1

Job Number: JC7097

Sample: E2M3441-ICV3441

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78922.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e2m3441\2m78922.D Vial: 13  
Acq On : 5 Nov 2015 12:20 am Operator: sarad  
Sample : icv3441-50 Inst : MS  
Misc : op88434,e2m3441, Multiplr: 1.00  
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
Last Update : Wed Nov 04 22:59:01 2015  
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
112 Naphthalene-d8a	1.000	1.000	0.0	111	0.00	6.13
113 Hydroquinone	0.364	0.383	-5.2	112	0.00	6.53

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
2m78915a.D M2M3440.M Thu Nov 05 01:03:40 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: E2M3441-ICV3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78923.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e2m3441\2m78923.D Vial: 14  
 Acq On : 5 Nov 2015 12:48 am Operator: sarad  
 Sample : icv3440-50 Inst : MS  
 Misc : op88434,e2m3441, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 22:59:01 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
83 I Chrysene-d12	1.000	1.000	0.0	111	0.00	14.64
89 t 3,3'-Dichlorobenzidine	0.391	0.463	-18.4	121	0.00	14.63

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 2m78915a.D M2M3440.M Thu Nov 05 01:10:28 2015

# Initial Calibration Verification

Page 1 of 1

Job Number: JC7097

Sample: E2M3441-ICV3441

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78923A.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e2m3441\2m78923a.D Vial: 14  
Acq On : 5 Nov 2015 12:48 am Operator: sarad  
Sample : icv3441-50 Inst : MS  
Misc : op88434,e2m3441, Multiplr: 1.00  
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
Last Update : Wed Nov 04 22:59:01 2015  
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
106 Chrysene-d12a	1.000	1.000	0.0	100	0.00	14.64
107 Benzidine	0.395	0.823	-108.4#	194	0.00	12.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
2m78915a.D M2M3440.M Thu Nov 05 01:10:29 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: E2M3442-ICV3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78926.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e2m3442\2m78926.D Vial: 2  
 Acq On : 5 Nov 2015 9:24 am Operator: ashley  
 Sample : icv3440-50 Inst : MS  
 Misc : op88434,e2m3442, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 22:59:01 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	153	0.00
9 t	Phenol	2.741	2.092	23.7	120	0.00
12 t	2-Chlorophenol	1.567	1.279	18.4	133	0.00
19 t	2-Methylphenol	1.668	1.366	18.1	134	0.00
21 t	3&4-Methylphenol	1.743	1.428	18.1	135	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	149	0.00
29 t	2-Nitrophenol	0.207	0.180	13.0	134	0.00
30 t	2,4-Dimethylphenol	0.488	0.405	17.0	131	0.00
31 t	Benzoic acid	0.336	0.292	13.1	124	0.00
33 t	2,4-Dichlorophenol	0.312	0.260	16.7	129	0.00
34 t	2,6-Dichlorophenol	0.306	0.261	14.7	136	0.00
43 t	4-Chloro-3-methylphenol	0.417	0.340	18.5	125	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	146	0.00
49 t	2,4,6-Trichlorophenol	0.401	0.344	14.2	127	0.00
50 t	2,4,5-Trichlorophenol	0.436	0.359	17.7	127	0.00
60 t	2,4-Dinitrophenol	100.000	74.152	25.8	98	0.00
61 t	4-Nitrophenol	0.225	0.180	20.0	111	0.00
64	2,3,4,6-Tetrachlorophenol	0.361	0.294	18.6	116	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	139	0.00
70 t	4,6-Dinitro-2-methylpheno	0.128	0.104	18.8	103	0.00
76 t	Pentachlorophenol	0.148	0.132	10.8	112	0.00

(#) = Out of Range  
 2m78915a.D M2M3440.M

SPCC's out = 0 CCC's out = 0  
 Thu Nov 05 09:47:00 2015

**Continuing Calibration Summary**

Job Number: JC7097

Sample: E2M3443-CC3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78928.D

Project: Sunoco - Marcus Hook Facility, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\e2m3443\2m78928.D Vial: 2  
 Acq On : 5 Nov 2015 10:09 am Operator: ashley  
 Sample : cc3440-50 Inst : MS  
 Misc : op88434,e2m3443, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 22:59:01 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	114	0.00	4.98
2 t	1,4-Dioxane	0.965	0.892	7.6	113	0.00	2.57
3 t	Pyridine	2.469	2.339	5.3	115	0.00	2.88
4 t	N-Nitrosodimethylamine	1.577	1.451	8.0	113	0.00	2.84
5 S	2-Fluorophenol	1.766	1.666	5.7	114	0.00	3.99
6 t	Indene	2.964	2.758	7.0	113	0.00	5.20
7 t	Cumene	4.649	4.302	7.5	114	0.00	4.38
8 S	Phenol-d5	2.543	2.409	5.3	114	0.00	4.69
9 t	Phenol	2.741	2.682	2.2	114	0.00	4.70
10	Aniline	3.244	3.046	6.1	113	0.00	4.73
11 t	bis(2-Chloroethyl)ether	2.038	1.837	9.9	113	0.00	4.77
12 t	2-Chlorophenol	1.567	1.449	7.5	111	0.00	4.82
13 t	Decane	1.444	1.269	12.1	112	0.00	4.85
14 t	1,3-Dichlorobenzene	1.642	1.509	8.1	114	0.00	4.94
15 t	1,4-Dichlorobenzene	1.653	1.528	7.6	114	0.00	5.00
16 t	Benzyl alcohol	1.171	1.109	5.3	113	0.00	5.09
17 t	1,2-Dichlorobenzene	1.561	1.398	10.4	112	0.00	5.13
18 t	Acetophenone	2.557	2.314	9.5	112	0.00	5.31
19 t	2-Methylphenol	1.668	1.546	7.3	112	0.00	5.18
20 t	2,2'-oxybis(1-Chloropropane)	1.865	1.547	17.1	111	0.00	5.20
21 t	3&4-Methylphenol	1.743	1.613	7.5	113	0.00	5.30
22 t	n-Nitroso-di-n-propylamin	1.674	1.479	11.6	111	0.00	5.31
23 t	Hexachloroethane	0.545	0.498	8.6	113	0.00	5.42
24 I	Naphthalene-d8	1.000	1.000	0.0	114	0.00	6.13
25 S	Nitrobenzene-d5	0.618	0.618	0.0	113	0.00	5.44
26 t	Nitrobenzene	0.609	0.562	7.7	112	0.00	5.46
27 t	Quinoline	0.809	0.772	4.6	115	0.00	6.51
28 t	Isophorone	1.085	1.026	5.4	113	0.00	5.67
29 t	2-Nitrophenol	0.207	0.203	1.9	115	0.00	5.75
30 t	2,4-Dimethylphenol	0.488	0.461	5.5	114	0.00	5.78
31 t	Benzoic acid	0.336	0.357	-6.2	115	0.00	5.88
32 t	bis(2-Chloroethoxy)methane	0.625	0.573	8.3	115	0.00	5.86
33 t	2,4-Dichlorophenol	0.312	0.297	4.8	112	0.00	5.98
34 t	2,6-Dichlorophenol	0.306	0.287	6.2	113	0.00	6.21
35 t	1,3,5-Trichlorobenzene	0.372	0.337	9.4	112	0.00	5.76
36 t	1,2,4-Trichlorobenzene	0.357	0.327	8.4	115	0.00	6.07
37 t	1,2,3-Trichlorobenzene	0.343	0.318	7.3	115	0.00	6.30
38 t	Naphthalene	1.325	1.117	15.7	114	0.00	6.15
39 t	4-Chloroaniline	0.507	0.474	6.5	113	0.00	6.20
40 t	2,3-Dichloroaniline	0.386	0.366	5.2	114	0.00	7.25
41 t	Caprolactam	0.179	0.176	1.7	116	0.00	6.57

# Continuing Calibration Summary

Page 2 of 3

Job Number: JC7097

Sample: E2M3443-CC3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78928.D

Project: Sunoco - Marcus Hook Facility, PA

42 t	Hexachlorobutadiene	0.212	0.194	8.5	111	0.00	6.28
43 t	4-Chloro-3-methylphenol	0.417	0.406	2.6	114	0.00	6.72
44 t	2-Methylnaphthalene	0.635	0.597	6.0	114	0.00	6.91
45 t	1-Methylnaphthalene	0.657	0.627	4.6	116	0.00	7.02
46 t	Dimethylnaphthalene	0.712	0.677	4.9	114	0.00	7.69
47 I	Acenaphthene-d10	1.000	1.000	0.0	115	0.00	8.26
48 t	Hexachlorocyclopentadiene	0.396	0.408	-3.0	114	0.00	7.11
49 t	2,4,6-Trichlorophenol	0.401	0.388	3.2	113	0.00	7.25
50 t	2,4,5-Trichlorophenol	0.436	0.418	4.1	116	0.00	7.30
51 S	2-Fluorobiphenyl	1.504	1.506	-0.1	114	0.00	7.36
52 t	2-Chloronaphthalene	1.243	1.145	7.9	113	0.00	7.51
53 t	Biphenyl	1.682	1.588	5.6	115	0.00	7.48
54 t	2-Nitroaniline	0.484	0.469	3.1	112	0.00	7.64
55 t	Dimethylphthalate	1.367	1.239	9.4	114	0.00	7.89
56 t	Acenaphthylene	2.313	2.000	13.5	114	0.00	8.06
57 t	2,6-Dinitrotoluene	0.295	0.292	1.0	113	0.00	7.97
58 t	3-Nitroaniline	0.358	0.349	2.5	110	0.00	8.20
59 t	Acenaphthene	1.395	1.195	14.3	113	0.00	8.30
-----				True	Calc.	% Drift	-----
60 t	2,4-Dinitrophenol	100.000	102.003	-2.0	115	0.00	8.34
-----				AvgRF	CCRF	% Dev	-----
61 t	4-Nitrophenol	0.225	0.226	-0.4	110	0.00	8.44
62 t	Dibenzofuran	1.827	1.716	6.1	115	0.00	8.55
63 t	2,4-Dinitrotoluene	0.401	0.394	1.7	113	0.00	8.53
64 t	2,3,4,6-Tetrachlorophenol	0.361	0.363	-0.6	113	0.00	8.73
65 t	Diethylphthalate	1.412	1.301	7.9	113	0.00	8.90
66 t	Fluorene	1.625	1.402	13.7	114	0.00	9.04
67 t	4-Chlorophenyl-phenylether	0.763	0.693	9.2	112	0.00	9.05
68 t	4-Nitroaniline	0.377	0.363	3.7	111	0.00	9.07
69 I	Phenanthrene-d10	1.000	1.000	0.0	112	0.00	10.45
70 t	4,6-Dinitro-2-methylpheno	0.128	0.144	-12.5	115	0.00	9.13
71 t	n-Nitrosodiphenylamine	0.611	0.592	3.1	114	0.00	9.23
72 t	1,2-Diphenylhydrazine	1.174	1.139	3.0	113	0.00	9.29
73 S	2,4,6-Tribromophenol	0.108	0.113	-4.6	111	0.00	9.39
74 t	4-Bromophenyl-phenylether	0.245	0.230	6.1	111	0.00	9.78
75 t	Hexachlorobenzene	0.268	0.257	4.1	115	0.00	9.88
76 t	Pentachlorophenol	0.148	0.163	-10.1	111	0.00	10.18
77 t	Phenanthrene	1.276	1.113	12.8	113	0.00	10.49
78 t	Anthracene	1.285	1.143	11.1	112	0.00	10.57
79 t	Carbazole	1.121	1.114	0.6	114	0.00	10.83
80 t	Di-n-butylphthalate	1.319	1.287	2.4	113	0.00	11.44
81 t	Fluoranthene	1.478	1.327	10.2	114	0.00	12.36
82 t	Octadecane	0.572	0.565	1.2	113	0.00	10.38
83 I	Chrysene-d12	1.000	1.000	0.0	114	0.00	14.64
84 t	Pyrene	1.466	1.283	12.5	114	0.00	12.71
85 S	Terphenyl-d14	0.919	0.929	-1.1	114	0.00	13.00
86 t	Butylbenzylphthalate	0.535	0.528	1.3	116	0.00	13.83
87	Butyl stearate	0.339	0.359	-5.9	112	0.00	13.99
88 t	Benzo[a]anthracene	1.407	1.203	14.5	113	0.00	14.63
89 t	3,3'-Dichlorobenzidine	0.391	0.415	-6.1	111	0.00	14.62
90 t	Chrysene	1.357	1.157	14.7	113	0.00	14.68
91 t	bis(2-Ethylhexyl)phthalat	0.728	0.704	3.3	114	0.00	14.79
92 I	Perylene-d12	1.000	1.000	0.0	114	0.00	16.76
93 t	Di-n-octylphthalate	1.377	1.371	0.4	113	0.00	15.77

8.7.13  
8

# Continuing Calibration Summary

Page 3 of 3

Job Number: JC7097

Sample: E2M3443-CC3440

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78928.D

Project: Sunoco - Marcus Hook Facility, PA

94 t	Benzo[b]fluoranthene	1.549	1.335	13.8	109	0.00	16.24
95 t	Benzo[k]fluoranthene	1.420	1.260	11.3	114	0.00	16.28
96 t	Benzo[a]pyrene	1.309	1.180	9.9	114	0.00	16.68
97 t	Indeno[1,2,3-cd]pyrene	1.257	1.094	13.0	110	0.00	18.48
98 t	Dibenz(a,h)acridine	0.986	0.977	0.9	110	0.00	18.08
99 t	Dibenz[a,h]anthracene	1.287	1.141	11.3	112	0.00	18.52
100 t	7,12-Dimethylbenz(a)anthr	0.612	0.616	-0.7	112	0.00	16.24
101 t	Benzo[g,h,i]perylene	1.278	1.119	12.4	112	0.00	18.98

(#) = Out of Range  
2m78915a.D M2M3440.M

SPCC's out = 0 CCC's out = 0  
Thu Nov 05 12:46:48 2015

8.7.13  
8

**Continuing Calibration Summary**

Job Number: JC7097

Sample: E2M3443-CC3441

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 2M78929.D

Project: Sunoco - Marcus Hook Facility, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\e2m3443\2m78929.D Vial: 3  
 Acq On : 5 Nov 2015 10:36 am Operator: ashley  
 Sample : cc3441-50 Inst : MS  
 Misc : op88434,e2m3443, Multiplr: 1.00  
 MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M2M3440.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 Last Update : Wed Nov 04 22:59:01 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	105	0.00 4.98
103	Benzaldehyde	1.426	1.406	1.4	112	0.00 4.64
104	Acenaphthene-d10a	1.000	1.000	0.0	91	0.00 8.26
105	1,2,4,5-Tetrachlorobenzene	0.594	0.654	-10.1	105	0.00 7.12
106	Chrysene-d12a	1.000	1.000	0.0	105	0.00 14.64
107	Benzidine	0.395	0.480	-21.5#	119	0.00 12.60
108	Phenanthrene-d10a	1.000	1.000	0.0	107	0.00 10.45
109	Atrazine	0.106	0.109	-2.8	104	0.00 10.06
110	Naphthalene-d8a	1.000	1.000	0.0	107	0.00 6.13
111	Hydroquinone	0.364	0.386	-6.0	109	0.00 6.53

(#) = Out of Range  
 2m78915a.D M2M3440.M

SPCC's out = 0 CCC's out = 0  
 Thu Nov 05 12:48:23 2015

**Initial Calibration Summary**

Job Number: JC7097

Sample: E3E3323-ICC3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76365.D

Project: Sunoco - Marcus Hook Facility, PA

## Response Factor Report MS3E

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 09:15:29 2015  
 Last Update : Wed Sep 30 09:15:29 2015  
 Response via : Initial Calibration

## Calibration Files

2	=3E76358.D	5	=3E76364.D	25	=3E76363.D	80	=3E76361.D
100	=3E76359.D	50	=3E76365.D	1	=3E76360.D	10	=3E76362.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
----------	---	---	----	----	-----	----	---	----	-----	------

1) I	1,4-Dichlorobenzene-d	-----ISTD-----								
2)	1,4-Dioxane	0.510	0.484	0.474	0.469	0.446	0.481	0.452	0.477	0.474
3)	Pyridine	1.228	1.173	1.162	1.158	1.126	1.195	1.242	1.253	1.192
4)	N-Nitrosodim	0.695	0.681	0.692	0.673	0.659	0.706	0.722	0.730	0.695
5)	2-Fluorophen	1.249	1.278	1.266	1.262	1.240	1.300	1.359	1.292	1.281
6)	Indene	2.610	2.588	2.526	2.468	2.417	2.532	2.560	2.588	2.536
7)	Cumene	3.068	3.152	3.036	3.010	2.918	3.139	3.399	3.164	3.111
8)	Phenol-d5	1.594	1.526	1.542	1.525	1.505	1.572	1.535	1.618	1.552
9)	Phenol	1.641	1.654	1.635	1.727	1.715	1.789	1.718	1.706	1.698
10)	Aniline	2.001	1.968	2.001	1.885	1.830	2.031	2.129	2.092	1.992
11)	bis(2-Chloro	1.205	1.161	1.112	1.098	1.070	1.128	1.273	1.175	1.153
12)	2-Chlorophen	1.512	1.488	1.492	1.464	1.449	1.514	1.582	1.584	1.511
13)	Decane	1.327	1.340	1.308	1.245	1.190	1.296	1.573	1.447	1.341
14)	1,3-Dichloro	1.614	1.654	1.598	1.574	1.548	1.637	1.767	1.674	1.633
15)	1,4-Dichloro	1.693	1.706	1.617	1.604	1.559	1.681	1.856	1.718	1.679
16)	Benzyl alcoh	0.941	0.890	0.872	0.888	0.893	0.931	0.944	0.908	0.908
17)	1,2-Dichloro	1.602	1.564	1.517	1.486	1.459	1.572	1.612	1.600	1.552
18)	Acetophenone	1.859	1.812	1.769	1.771	1.745	1.816	1.930	1.889	1.824
19)	2-Methylphen	1.260	1.248	1.244	1.186	1.201	1.255	1.315	1.276	1.248
20)	2,2'-oxybis(	0.535	0.518	0.482	0.476	0.469	0.492	0.522	0.505	0.500
21)	3&4-Methylph	1.387	1.269	1.317	1.319	1.309	1.351	1.321	1.389	1.333
22)	n-Nitroso-di	0.856	0.825	0.811	0.803	0.796	0.819	1.001	0.863	0.847
23)	Hexachloroet	0.470	0.435	0.428	0.419	0.414	0.450	0.429	0.436	0.435
24)	I Naphthalene-d8	-----ISTD-----								
25)	Nitrobenzene	0.293	0.306	0.293	0.302	0.298	0.293	0.319	0.315	0.303
26)	Nitrobenzene	0.287	0.304	0.294	0.302	0.301	0.295	0.300	0.320	0.300
27)	Quinoline	0.736	0.728	0.710	0.720	0.713	0.703	0.756	0.752	0.727
28)	Isophorone	0.539	0.537	0.533	0.548	0.544	0.530	0.567	0.562	0.545
29)	2-Nitropheno	0.212	0.198	0.198	0.207	0.208	0.201	0.212	0.211	0.206
30)	2,4-Dimethyl	0.320	0.301	0.314	0.318	0.316	0.317	0.304	0.321	0.314
31)	Benzoic acid	0.181	0.239	0.228	0.212		0.176	0.207		13.53
32)	bis(2-Chloro	0.349	0.341	0.319	0.326	0.327	0.321	0.369	0.347	0.337
33)	2,4-Dichloro	0.277	0.275	0.270	0.276	0.277	0.274	0.269	0.286	0.276
34)	2,6-Dichloro	0.285	0.281	0.273	0.270	0.268	0.271	0.295	0.281	0.278
35)	1,3,5-Trichl	0.327	0.313	0.279	0.287	0.281	0.290	0.297	0.301	0.297
36)	1,2,4-Trichl	0.278	0.284	0.267	0.271	0.267	0.272	0.292	0.283	0.277
37)	1,2,3-Trichl	0.285	0.283	0.259	0.259	0.255	0.264	0.280	0.276	0.270
38)	Naphthalene	1.120	1.097	1.048	1.063	1.039	1.045	1.139	1.113	1.083
39)	4-Chloroanil	0.466	0.471	0.441	0.456	0.452	0.453	0.467	0.490	0.462
40)	2,3-Dichloro	0.338	0.355	0.335	0.340	0.333	0.337	0.349	0.350	0.342
41)	Caprolactam	0.143	0.131	0.134	0.145	0.144	0.136	0.155	0.151	0.142
42)	Hexachlorobu	0.139	0.141	0.133	0.133	0.130	0.131	0.139	0.138	0.135
43)	4-Chloro-3-m	0.265	0.260	0.268	0.280	0.278	0.270	0.284	0.284	0.274
44)	2-Methylnaph	0.611	0.611	0.593	0.596	0.588	0.592	0.635	0.625	0.606
45)	1-Methylnaph	0.632	0.642	0.611	0.617	0.603	0.599	0.630	0.653	0.623

8.7.15  
8

**Initial Calibration Summary**

Job Number: JC7097

Sample: E3E3323-ICC3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76365.D

Project: Sunoco - Marcus Hook Facility, PA

46) Dimethylnaph 0.648 0.654 0.607 0.603 0.596 0.610 0.674 0.658 0.631 4.79

47) I Acenaphthene-d10 -----ISTD-----

48) Hexachlorocy 0.282 0.296 0.349 0.340 0.340 0.362 0.273 0.306 0.319 10.43

49) 2,4,6-Trichl 0.314 0.333 0.359 0.336 0.332 0.361 0.307 0.341 0.335 5.71

50) 2,4,5-Trichl 0.348 0.323 0.372 0.343 0.337 0.373 0.338 0.335 0.346 5.12

51) 2-Fluorobiph 1.237 1.223 1.353 1.229 1.197 1.320 1.307 1.261 1.266 4.32

52) 2-Chloronaph 1.120 1.143 1.202 1.101 1.077 1.191 1.179 1.152 1.146 3.86

53) Biphenyl 1.543 1.563 1.674 1.545 1.527 1.665 1.608 1.595 1.590 3.53

54) 2-Nitroanili 0.276 0.287 0.321 0.313 0.316 0.321 0.284 0.300 0.302 5.87

55) Dimethylphth 1.281 1.239 1.366 1.248 1.229 1.336 1.287 1.292 1.285 3.70

56) Acenaphthyle 1.834 1.932 2.107 1.920 1.875 2.077 1.991 1.967 1.963 4.78

57) 2,6-Dinitrot 0.270 0.287 0.315 0.297 0.295 0.314 0.289 0.294 0.295 4.98

58) 3-Nitroanili 0.358 0.366 0.417 0.393 0.393 0.419 0.388 0.381 0.389 5.55

59) Acenaphthene 1.177 1.192 1.293 1.202 1.178 1.285 1.290 1.237 1.232 4.16

60) 2,4-Dinitrop 0.069 0.090 0.164 0.183 0.188 0.182 0.051 0.132 0.132 41.92

---- Quadratic regression ---- Coefficient = 0.9996

Response Ratio = -0.01513 + 0.17663 \*A + 0.00288 \*A^2

61) 4-Nitropheno 0.137 0.137 0.164 0.164 0.166 0.168 0.136 0.156 0.153 9.41

62) Dibenzofuran 1.642 1.628 1.779 1.628 1.599 1.781 1.709 1.692 1.682 4.16

63) 2,4-Dinitrot 0.344 0.362 0.445 0.411 0.404 0.440 0.380 0.400 0.398 8.84

64) 2,3,4,6-Tetr 0.250 0.264 0.298 0.273 0.268 0.291 0.242 0.267 0.269 7.01

65) Diethylphtha 1.560 1.300 1.430 1.312 1.317 1.410 1.305 1.343 1.372 6.58

66) Fluorene 1.327 1.303 1.452 1.323 1.321 1.436 1.325 1.358 1.356 4.19

67) 4-Chlorophen 0.525 0.540 0.583 0.517 0.511 0.575 0.510 0.549 0.539 5.28

68) 4-Nitroanili 0.359 0.390 0.445 0.396 0.391 0.439 0.377 0.412 0.401 7.34

69) I Phenanthrene-d10 -----ISTD-----

70) 4,6-Dinitro- 0.099 0.123 0.156 0.155 0.134 0.122 0.132 16.62

71) n-Nitrosodip 0.605 0.623 0.577 0.644 0.640 0.578 0.635 0.641 0.618 4.51

72) 1,2-Diphenyl 0.678 0.724 0.656 0.754 0.750 0.654 0.710 0.739 0.708 5.74

73) 2,4,6-Tribro 0.125 0.121 0.121 0.136 0.137 0.121 0.152 0.129 0.130 8.32

74) 4-Bromopheny 0.198 0.193 0.182 0.202 0.195 0.184 0.198 0.207 0.195 4.38

75) Hexachlorobe 0.237 0.244 0.225 0.253 0.243 0.224 0.249 0.250 0.241 4.64

76) Pentachlorop 0.137 0.143 0.145 0.174 0.174 0.150 0.119 0.159 0.150 12.54

77) Phenanthrene 1.224 1.218 1.079 1.170 1.146 1.055 1.265 1.213 1.171 6.30

78) Anthracene 1.191 1.236 1.104 1.200 1.165 1.106 1.288 1.262 1.194 5.65

79) Carbazole 1.176 1.155 1.061 1.178 1.153 1.053 1.226 1.210 1.152 5.53

80) Di-n-butylph 1.379 1.384 1.335 1.517 1.526 1.335 1.448 1.469 1.424 5.39

81) Fluoranthene 1.091 1.124 1.032 1.153 1.142 1.021 1.209 1.159 1.117 5.81

82) Octadecane 0.474 0.506 0.483 0.568 0.561 0.485 0.547 0.543 0.521 7.30

83) I Chrysene-d12 -----ISTD-----

84) Pyrene 1.298 1.284 1.194 1.277 1.261 1.212 1.433 1.306 1.283 5.65

85) Terphenyl-d1 0.985 0.853 0.748 0.812 0.805 0.760 1.204 0.830 0.874 17.35

86) Butylbenzylp 0.659 0.650 0.648 0.724 0.727 0.665 0.729 0.690 0.687 5.21

87) Butyl steara 0.421 0.388 0.384 0.442 0.445 0.394 0.421 0.418 0.414 5.64

88) Benzo[a]anth 1.136 1.139 1.035 1.098 1.106 1.028 1.274 1.145 1.120 6.86

89) 3,3'-Dichlor 0.427 0.421 0.428 0.479 0.486 0.444 0.452 0.476 0.452 5.71

90) Chrysene 1.110 1.080 0.999 1.044 1.007 0.979 1.139 1.093 1.056 5.49

91) bis(2-Ethyh 0.942 0.915 0.891 0.963 0.960 0.890 1.039 0.961 0.945 5.12

92) I Perylene-d12 -----ISTD-----

93) Di-n-octylph 1.574 1.453 1.467 1.711 1.706 1.527 1.511 1.539 1.561 6.33

94) Benzo[b]fluo 1.176 1.138 1.088 1.224 1.239 1.122 1.211 1.169 1.171 4.50

95) Benzo[k]fluo 1.088 1.062 1.032 1.088 0.999 1.027 1.158 1.098 1.069 4.68

96) Benzo[alpyre 1.085 1.003 0.958 1.044 1.015 0.980 1.124 1.024 1.029 5.28

97) Indeno[1,2,3 1.033 0.943 0.943 1.080 1.039 0.958 1.145 0.978 1.015 7.17

98) Dibenz(a,h)a 0.903 0.894 0.871 0.986 0.950 0.896 0.965 0.918 0.923 4.31

## Initial Calibration Summary

Page 3 of 3

Job Number: JC7097

Sample: E3E3323-ICC3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76365.D

Project: Sunoco - Marcus Hook Facility, PA

---

99) Dibenz[a,h]a 1.044 1.009 0.984 1.078 1.037 1.002 1.032 1.035 1.027 2.82  
100) 7,12-Dimethy 0.512 0.490 0.535 0.591 0.588 0.552 0.516 0.531 0.539 6.62  
101) Benzo[g,h,i] 1.032 0.976 0.940 1.044 0.999 0.962 1.143 1.018 1.014 6.22

---

(#) = Out of Range   ###  Number of calibration levels exceeded format   ###

M3E3323.M                   Wed Sep 30 09:15:43 2015           MS3E

8.7.15

8

**Initial Calibration Summary**

Job Number: JC7097

Sample: E3E3325-ICC3325

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76384.D

Project: Sunoco - Marcus Hook Facility, PA

## Response Factor Report MS3E

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Initial Calibration

## Calibration Files

2	=3E76388.D	5	=3E76387.D	25	=3E76385.D	80	=3E76383.D
100	=3E76382.D	50	=3E76384.D	1	=3E76389.D	10	=3E76386.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
----------	---	---	----	----	-----	----	---	----	-----	------

102) 1,4-Dichlorobenzene-d -----ISTD-----  
 103) Benzaldehyde 1.561 0.907 0.989 0.998 0.975 1.002 1.159 1.042 1.079 19.19

104) Acenaphthene-d10a -----ISTD-----  
 105) 1,2,4,5-Tetr 0.683 0.399 0.427 0.436 0.424 0.430 0.492 0.436 0.466 19.65

106) Phenanthrene-d10a -----ISTD-----  
 107) Atrazine 0.150 0.092 0.103 0.104 0.099 0.103 0.098 0.104 0.107 16.80  
 108) o-Terphenyl 0.779 0.450 0.505 0.514 0.499 0.511 0.542 0.516 0.540 18.52  
 109) 1-Chloroocta 0.440 0.264 0.300 0.310 0.302 0.304 0.320 0.311 0.319 16.18

110) I Chrysene-d12a -----ISTD-----  
 111) benzidine 0.557 0.484 0.532 0.370 0.535 0.556 0.506 14.12

112) I Naphthalene-d8a -----ISTD-----  
 113) Hydroquinone 0.404 0.258 0.315 0.343 0.315 0.336 0.305 0.297 0.322 13.10

114) i Chrysene-d12b -----ISTD-----  
 115) 2,3,7,8-TCDD 0.000# -1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

M3E3323.M Wed Sep 30 14:02:09 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Sample: E3E3325-ICV3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76391.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76391.D Vial: 11  
 Acq On : 30 Sep 2015 2:29 pm Operator: ashley  
 Sample : icv3323-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	141	0.00
3 t	Pyridine	1.192	1.174	1.5	138	0.12
10	Aniline	1.992	1.701	14.6	118	0.00
16 t	Benzyl alcohol	0.908	0.824	9.3	125	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	140	0.00
39 t	4-Chloroaniline	0.462	0.377	18.4	117	0.00
44 t	2-Methylnaphthalene	0.606	0.528	12.9	125	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	163	0.00
54 t	2-Nitroaniline	0.302	0.218	27.8	111	0.00
58 t	3-Nitroaniline	0.389	0.294	24.4	115	0.00
62 t	Dibenzofuran	1.682	1.348	19.9	124	0.00
68 t	4-Nitroaniline	0.401	0.281	29.9	105	-0.01
69 I	Phenanthrene-d10	1.000	1.000	0.0	139	0.00
79 t	Carbazole	1.152	0.903	21.6	120	0.00
<hr/>						
<hr/>						

( # ) = Out of Range  
3E76384a.D M3E3323.MSPCC's out = 0 CCC's out = 0  
Wed Sep 30 15:14:39 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: E3E3325-ICV3325  
Lab FileID: 3E76392A.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76392a.D Vial: 12  
 Acq On : 30 Sep 2015 2:55 pm Operator: ashley  
 Sample : icv3325-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
104	Acenaphthene-d10a	1.000	1.000	0.0	125	0.00 8.09
105	1,2,4,5-Tetrachlorobenzen	0.466	0.439	5.8	128	0.00 6.96
<hr/>						
<hr/>						

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76384a.D M3E3323.M Wed Sep 30 15:25:39 2015 MS3E

8.7.18

8

**Initial Calibration Verification**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: E3E3325-ICV3323  
Lab FileID: 3E76392.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76392.D Vial: 12  
 Acq On : 30 Sep 2015 2:55 pm Operator: ashley  
 Sample : icv3323-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	134	0.00	4.86
4 t	N-Nitrosodimethylamine	0.695	0.642	7.6	122	0.01	2.71
11 t	bis(2-Chloroethyl)ether	1.153	1.043	9.5	124	0.00	4.65
14 t	1,3-Dichlorobenzene	1.633	1.530	6.3	125	0.00	4.82
15 t	1,4-Dichlorobenzene	1.679	1.530	8.9	122	0.00	4.87
17 t	1,2-Dichlorobenzene	1.552	1.456	6.2	124	0.00	5.00
20 t	2,2'-oxybis(1-Chloropropyl)	0.500	0.450	10.0	122	0.00	5.07
22 t	n-Nitroso-di-n-propylamin	0.847	0.723	14.6	118	0.00	5.18
23 t	Hexachloroethane	0.435	0.417	4.1	124	0.00	5.28
24 I	Naphthalene-d8	1.000	1.000	0.0	122	0.00	5.98
26 t	Nitrobenzene	0.300	0.281	6.3	116	0.00	5.33
28 t	Isophorone	0.545	0.525	3.7	121	0.00	5.53
32 t	bis(2-Chloroethoxy)methan	0.337	0.326	3.3	124	0.00	5.73
36 t	1,2,4-Trichlorobenzene	0.277	0.270	2.5	121	0.00	5.93
38 t	Naphthalene	1.083	1.016	6.2	119	0.00	6.01
42 t	Hexachlorobutadiene	0.135	0.135	0.0	126	0.00	6.14
47 I	Acenaphthene-d10	1.000	1.000	0.0	133	0.00	8.09
48 t	Hexachlorocyclopentadiene	0.319	0.282	11.6	104	0.00	6.96
52 t	2-Chloronaphthalene	1.146	1.042	9.1	117	0.00	7.35
55 t	Dimethylphthalate	1.285	1.138	11.4	113	0.00	7.74
56 t	Acenaphthylene	1.963	1.669	15.0	107	0.00	7.89
57 t	2,6-Dinitrotoluene	0.295	0.263	10.8	112	0.00	7.81
59 t	Acenaphthene	1.232	1.156	6.2	120	0.00	8.14
63 t	2,4-Dinitrotoluene	0.398	0.331	16.8	100	-0.01	8.36
65 t	Diethylphthalate	1.372	1.161	15.4	110	-0.01	8.74
66 t	Fluorene	1.356	1.211	10.7	112	0.00	8.88
67 t	4-Chlorophenyl-phenylethe	0.539	0.484	10.2	112	0.00	8.89
69 I	Phenanthrene-d10	1.000	1.000	0.0	106	0.00	10.28
71 t	n-Nitrosodiphenylamine	0.618	0.550	11.0	101	0.00	9.06
72 t	1,2-Diphenylhydrazine	0.708	0.675	4.7	109	0.00	9.12
74 t	4-Bromophenyl-phenylether	0.195	0.193	1.0	111	0.00	9.62
75 t	Hexachlorobenzene	0.241	0.235	2.5	111	0.00	9.71
77 t	Phenanthrene	1.171	1.102	5.9	111	0.00	10.32
78 t	Anthracene	1.194	1.116	6.5	107	0.00	10.40
80 t	Di-n-butylphthalate	1.424	1.281	10.0	102	-0.01	11.29
81 t	Fluoranthene	1.117	1.008	9.8	105	-0.01	12.19
83 I	Chrysene-d12	1.000	1.000	0.0	99	-0.01	14.48
84 t	Pyrene	1.283	1.247	2.8	101	-0.01	12.54

**Initial Calibration Verification**

Job Number: JC7097

Sample: E3E3325-ICV3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76392.D

Project: Sunoco - Marcus Hook Facility, PA

86 t	Butylbenzylphthalate	0.687	0.667	2.9	99	0.00	13.68
88 t	Benzo[a]anthracene	1.120	1.065	4.9	102	-0.01	14.47
89 t	3,3'-Dichlorobenzidine	0.452	0.318	29.7	71	-0.01	14.47
90 t	Chrysene	1.056	0.994	5.9	100	-0.01	14.53
91 t	bis(2-Ethylhexyl)phthalat	0.945	0.894	5.4	99	-0.01	14.64
92 I	Perylene-d12	1.000	1.000	0.0	91	-0.01	16.60
93 t	Di-n-octylphthalate	1.561	1.613	-3.3	96	-0.01	15.63
94 t	Benzo[b]fluoranthene	1.171	1.145	2.2	93	-0.01	16.08
95 t	Benzo[k]fluoranthene	1.069	1.075	-0.6	95	-0.02	16.12
96 t	Benzo[a]pyrene	1.029	1.045	-1.6	97	0.00	16.53
97 t	Indeno[1,2,3-cd]pyrene	1.015	0.986	2.9	93	-0.02	18.24
99 t	Dibenz[a,h]anthracene	1.027	1.035	-0.8	94	-0.01	18.29
101 t	Benzo[g,h,i]perylene	1.014	0.954	5.9	90	-0.02	18.71

( # ) = Out of Range

SPCC's out = 0 CCC's out = 0

3E76384a.D M3E3323.M

Wed Sep 30 15:24:41 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Sample: E3E3325-ICV3325

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76393A.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76393a.D Vial: 13  
 Acq On : 30 Sep 2015 3:21 pm Operator: ashley  
 Sample : icv3325-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
<hr/>							
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	123	0.00	4.86
103	Benzaldehyde	1.079	0.986	8.6	121	0.00	4.52
<hr/>							
106	Phenanthrene-d10a	1.000	1.000	0.0	108	0.00	10.28
107	Atrazine	0.107	0.098	8.4	103	0.00	9.91
<hr/>							
<hr/>							

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76384a.D M3E3323.M Wed Sep 30 16:06:33 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: E3E3325-ICV3323  
Lab FileID: 3E76393.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76393.D Vial: 13  
 Acq On : 30 Sep 2015 3:21 pm Operator: ashley  
 Sample : icv3323-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	119	0.00
2 t	1,4-Dioxane	0.474	0.448	5.5	111	0.02
6 t	Indene	2.536	2.335	7.9	110	0.00
7 t	Cumene	3.111	2.937	5.6	111	0.00
13 t	Decane	1.341	1.195	10.9	110	0.00
18 t	Acetophenone	1.824	1.649	9.6	108	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	116	0.00
27 t	Quinoline	0.727	0.643	11.6	106	-0.01
40 t	2,3-Dichloroaniline	0.342	0.268	21.6	92	0.00
41 t	Caprolactam	0.142	0.111	21.8	95	-0.03
45 t	1-Methylnaphthalene	0.623	0.548	12.0	106	0.00
46 t	Dimethylnaphthalene	0.631	0.565	10.5	108	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	122	0.00
53 t	Biphenyl	1.590	1.478	7.0	108	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	101	0.00
82 t	Octadecane	0.521	0.461	11.5	96	0.00
92 I	Perylene-d12	1.000	1.000	0.0	104	-0.01
100 t	7,12-Dimethylbenz(a)anthr	0.539	0.430	20.2	81	-0.02
<hr/>						
<hr/>						

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76384a.D M3E3323.M Wed Sep 30 16:06:31 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Sample: E3E3325-ICV3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E76394.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76394.D Vial: 14  
 Acq On : 30 Sep 2015 3:47 pm Operator: ashley  
 Sample : icv3323-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	139	0.00
5 S	2-Fluorophenol	1.281	1.152	10.1	123	0.00
8 S	Phenol-d5	1.552	1.342	13.5	119	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	130	0.00
25 S	Nitrobenzene-d5	0.303	0.276	8.9	123	0.00
47 I	Acenaphthene-d10	1.000	1.000	0.0	145	0.00
51 S	2-Fluorobiphenyl	1.266	1.177	7.0	129	0.00
69 I	Phenanthrene-d10	1.000	1.000	0.0	120	0.00
73 S	2,4,6-Tribromophenol	0.130	0.102	21.5	101	-0.01
83 I	Chrysene-d12	1.000	1.000	0.0	117	-0.02
85 S	Terphenyl-d14	0.874	0.766	12.4	118	-0.01
<hr/>						
<hr/>						

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76384a.D M3E3323.M Wed Sep 30 16:09:50 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: E3E3325-ICV3325  
Lab FileID: 3E76395.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76395.D Vial: 15  
 Acq On : 30 Sep 2015 4:12 pm Operator: ashley  
 Sample : icv3325-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
<hr/>						
110 I Chrysene-d12a	1.000	1.000	0.0	160	0.00	14.48
111 T benzidine	0.506	0.596	-17.8	179	0.00	12.44
<hr/>						
<hr/>						

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76384a.D M3E3323.M Wed Sep 30 16:34:21 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: E3E3325-ICV3325  
Lab FileID: 3E76396.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3325\3E76396.D Vial: 16  
 Acq On : 30 Sep 2015 4:38 pm Operator: ashley  
 Sample : icv3325-50 Inst : MS3E  
 Misc : op87432,e3e3325, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
<hr/>						
112 I Naphthalene-d8a	1.000	1.000	0.0	156	0.00	5.98
113 T Hydroquinone	0.322	0.381	-18.3	177	0.02	6.40
<hr/>						
<hr/>						

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76384a.D M3E3323.M Wed Sep 30 17:13:34 2015 MS3E

**Initial Calibration Verification**

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PASample: E3E3326-ICV3323  
Lab FileID: 3E76400.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3326\3E76400.D Vial: 2  
 Acq On : 30 Sep 2015 5:51 pm Operator: ashley  
 Sample : icv3323-50 Inst : MS3E  
 Misc : op87432,e3e3326, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS, zb-5msi 30m x .25mm x .25MoTuWed Sep 30 14:01:52 2015  
 Last Update : Wed Sep 30 14:01:52 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	127	0.00
9 t	Phenol	1.698	1.375	19.0	98	0.00
12 t	2-Chlorophenol	1.511	1.341	11.3	112	0.00
19 t	2-Methylphenol	1.248	1.124	9.9	114	-0.01
21 t	3&4-Methylphenol	1.333	1.178	11.6	111	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	120	0.00
29 t	2-Nitrophenol	0.206	0.191	7.3	114	0.00
30 t	2,4-Dimethylphenol	0.314	0.292	7.0	111	0.00
31 t	Benzoic acid	0.207	0.207	0.0	117	0.00
33 t	2,4-Dichlorophenol	0.276	0.251	9.1	110	0.00
34 t	2,6-Dichlorophenol	0.278	0.249	10.4	111	-0.01
43 t	4-Chloro-3-methylphenol	0.274	0.243	11.3	108	-0.02
47 I	Acenaphthene-d10	1.000	1.000	0.0	133	-0.01
49 t	2,4,6-Trichlorophenol	0.335	0.301	10.1	111	-0.01
50 t	2,4,5-Trichlorophenol	0.346	0.304	12.1	109	-0.02
<hr/>						
60 t	2,4-Dinitrophenol	50.000	36.710	26.6	88	-0.02
<hr/>						
61 t	4-Nitrophenol	0.153	0.132	13.7	104	-0.01
64	2,3,4,6-Tetrachlorophenol	0.269	0.249	7.4	114	-0.01
69 I	Phenanthrene-d10	1.000	1.000	0.0	110	-0.01
70 t	4,6-Dinitro-2-methylpheno	0.132	0.123	6.8	100	-0.02
76 t	Pentachlorophenol	0.150	0.142	5.3	104	-0.01
<hr/>						

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76384a.D M3E3323.M Wed Sep 30 21:08:00 2015 MS3E

# Continuing Calibration Summary

Job Number: JC7097

Sample: E3E3375-CC3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E77539.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3375\3E77539.D Vial: 2  
 Acq On : 2 Nov 2015 10:19 pm Operator: sarad  
 Sample : cc3323-25 Inst : MS3E  
 Misc : op88532,e3e3375, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015  
 Last Update : Mon Nov 02 23:01:31 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	71	0.00
2 t	1,4-Dioxane	0.474	0.413	12.9	62	-0.12
3 t	Pyridine	1.192	1.011	15.2	62	-0.08
4 t	N-Nitrosodimethylamine	0.695	0.597	14.1	61	-0.09
5 S	2-Fluorophenol	1.281	1.133	11.6	63	0.00
6 t	Indene	2.536	2.423	4.5	68	0.00
7 t	Cumene	3.111	3.147	-1.2	74	-0.03
8 S	Phenol-d5	1.552	1.466	5.5	67	-0.02
9 t	Phenol	1.698	1.666	1.9	72	0.04
10	Aniline	1.992	1.555	21.9#	55	0.00
11 t	bis(2-Chloroethyl)ether	1.153	1.094	5.1	70	0.00
12 t	2-Chlorophenol	1.511	1.384	8.4	66	0.00
13 t	Decane	1.341	0.940	29.9#	51	-0.01
14 t	1,3-Dichlorobenzene	1.633	1.534	6.1	68	0.00
15 t	1,4-Dichlorobenzene	1.679	1.595	5.0	70	0.00
16 t	Benzyl alcohol	0.908	0.840	7.5	68	0.00
17 t	1,2-Dichlorobenzene	1.552	1.461	5.9	68	0.00
18 t	Acetophenone	1.824	1.830	-0.3	73	0.00
19 t	2-Methylphenol	1.248	1.134	9.1	65	0.03
20 t	2,2'-oxybis(1-Chloropropyl)	0.500	0.471	5.8	69	0.00
21 t	3&4-Methylphenol	1.333	1.218	8.6	66	0.03
22 t	n-Nitroso-di-n-propylamin	0.847	0.888	-4.8	78	0.00
23 t	Hexachloroethane	0.435	0.508	-16.8	84	0.00
24 I	Naphthalene-d8	1.000	1.000	0.0	66	0.00
25 S	Nitrobenzene-d5	0.303	0.382	-26.1#	86	0.02
26 t	Nitrobenzene	0.300	0.364	-21.3#	82	0.00
27 t	Quinoline	0.727	0.731	-0.6	68	0.00
28 t	Isophorone	0.545	0.587	-7.7	73	0.00
29 t	2-Nitrophenol	0.206	0.211	-2.4	70	0.00
30 t	2,4-Dimethylphenol	0.314	0.300	4.5	63	0.00
31 t	Benzoic acid	0.207	0.269	-30.0#	98	0.05
32 t	bis(2-Chloroethoxy)methan	0.337	0.330	2.1	68	0.00
33 t	2,4-Dichlorophenol	0.276	0.294	-6.5	72	0.03
34 t	2,6-Dichlorophenol	0.278	0.286	-2.9	69	0.00
35	1,3,5-Trichlorobenzene	0.297	0.328	-10.4	78	0.00
36 t	1,2,4-Trichlorobenzene	0.277	0.306	-10.5	76	0.00
37	1,2,3-Trichlorobenzene	0.270	0.307	-13.7	79	0.00
38 t	Naphthalene	1.083	1.081	0.2	68	0.00
39 t	4-Chloroaniline	0.462	0.430	6.9	64	0.01
40 t	2,3-Dichloroaniline	0.342	0.366	-7.0	72	0.03
41 t	Caprolactam	0.142	0.117	17.6	58	0.02

8.7.26  
8

**Continuing Calibration Summary**

Job Number: JC7097

Sample: E3E3375-CC3323

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3E77539.D

42 t	Hexachlorobutadiene	0.135	0.173	-28.1#	86	0.00	5.90
43 t	4-Chloro-3-methylphenol	0.274	0.309	-12.8	76	0.05	6.37
44 t	2-Methylnaphthalene	0.606	0.611	-0.8	68	0.00	6.51
45 t	1-Methylnaphthalene	0.623	0.653	-4.8	71	0.00	6.62
46 t	Dimethylnaphthalene	0.631	0.648	-2.7	71	0.03	7.27
47 I	Acenaphthene-d10	1.000	1.000	0.0	85	0.00	7.82
48 t	Hexachlorocyclopentadiene	0.319	0.202	36.7#	49#	-0.03	6.70
49 t	2,4,6-Trichlorophenol	0.335	0.346	-3.3	82	0.00	6.87
50 t	2,4,5-Trichlorophenol	0.346	0.356	-2.9	81	0.02	6.93
51 S	2-Fluorobiphenyl	1.266	1.344	-6.2	84	-0.01	6.95
52 t	2-Chloronaphthalene	1.146	1.079	5.8	76	0.00	7.10
53 t	Biphenyl	1.590	1.407	11.5	71	-0.02	7.07
54 t	2-Nitroaniline	0.302	0.326	-7.9	86	0.01	7.24
55 t	Dimethylphthalate	1.285	1.246	3.0	77	0.00	7.48
56 t	Acenaphthylene	1.963	1.801	8.3	72	0.00	7.63
57 t	2,6-Dinitrotoluene	0.295	0.293	0.7	79	0.02	7.56
58 t	3-Nitroaniline	0.389	0.331	14.9	67	0.02	7.79
59 t	Acenaphthene	1.232	1.130	8.3	74	0.00	7.87
-----		True	Calc.	% Drift	-----		
60 t	2,4-Dinitrophenol	50.000	47.451	5.1	82	0.00	7.96
-----		AvgRF	CCRF	% Dev	-----		
61 t	4-Nitrophenol	0.153	0.183	-19.6	95	0.11	8.12
62 t	Dibenzofuran	1.682	1.519	9.7	72	0.00	8.11
63 t	2,4-Dinitrotoluene	0.398	0.398	0.0	76	0.04	8.13
64	2,3,4,6-Tetrachlorophenol	0.269	0.258	4.1	73	0.04	8.32
65 t	Diethylphthalate	1.372	1.292	5.8	77	0.01	8.47
66 t	Fluorene	1.356	1.279	5.7	75	0.02	8.60
67 t	4-Chlorophenyl-phenylether	0.539	0.585	-8.5	85	0.02	8.61
68 t	4-Nitroaniline	0.401	0.338	15.7	64	0.00	8.66
69 I	Phenanthrene-d10	1.000	1.000	0.0	77	0.00	10.00
70 t	4,6-Dinitro-2-methylpheno	0.132	0.134	-1.5	84	0.02	8.74
71 t	n-Nitrosodiphenylamine	0.618	0.552	10.7	74	-0.02	8.79
72 t	1,2-Diphenylhydrazine	0.708	0.701	1.0	82	-0.03	8.85
73 S	2,4,6-Tribromophenol	0.130	0.121	6.9	77	-0.01	8.96
74 t	4-Bromophenyl-phenylether	0.195	0.210	-7.7	89	-0.02	9.33
75 t	Hexachlorobenzene	0.241	0.244	-1.2	84	0.00	9.43
76 t	Pentachlorophenol	0.150	0.113	24.7#	60	0.02	9.76
77 t	Phenanthrene	1.171	1.065	9.1	76	0.00	10.04
78 t	Anthracene	1.194	1.082	9.4	75	0.00	10.11
79 t	Carbazole	1.152	1.008	12.5	73	0.03	10.40
80 t	Di-n-butylphthalate	1.424	1.321	7.2	76	0.02	11.00
81 t	Fluoranthene	1.117	1.121	-0.4	84	0.05	11.90
82 t	Octadecane	0.521	0.349	33.0#	56	-0.01	9.94
83 I	Chrysene-d12	1.000	1.000	0.0	85	0.00	14.20
84 t	Pyrene	1.283	1.178	8.2	84	-0.04	12.25
85 S	Terphenyl-d14	0.874	0.895	-2.4	102	-0.04	12.55
86 t	Butylbenzylphthalate	0.687	0.589	14.3	78	-0.03	13.38
87	Butyl stearate	0.414	0.262	36.7#	58	-0.03	13.54
88 t	Benzo[a]anthracene	1.120	1.079	3.7	89	0.00	14.18
89 t	3,3'-Dichlorobenzidine	0.452	0.456	-0.9	91	0.00	14.18
90 t	Chrysene	1.056	1.013	4.1	87	0.00	14.24
91 t	bis(2-Ethylhexyl)phthalat	0.945	0.815	13.8	78	-0.02	14.33
92 I	Perylene-d12	1.000	1.000	0.0	73	0.00	16.33
93 t	Di-n-octylphthalate	1.561	1.509	3.3	75	0.00	15.32

8.7.26  
8

**Continuing Calibration Summary**

Job Number: JC7097

Sample: E3E3375-CC3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E77539.D

Project: Sunoco - Marcus Hook Facility, PA

94 t	Benzo[b]fluoranthene	1.171	1.189	-1.5	80	-0.01	15.80
95 t	Benzo[k]fluoranthene	1.069	1.070	-0.1	76	-0.02	15.84
96 t	Benzo[a]pyrene	1.029	1.031	-0.2	79	0.00	16.25
97 t	Indeno[1,2,3-cd]pyrene	1.015	1.184	-16.7	92	0.00	17.87
98 t	Dibenz(a,h)acridine	0.923	0.917	0.7	77	0.02	17.52
99 t	Dibenz[a,h]anthracene	1.027	1.041	-1.4	77	0.00	17.90
100 t	7,12-Dimethylbenz(a)anthr	0.539	0.526	2.4	72	-0.04	15.79
101 t	Benzo[g,h,i]perylene	1.014	1.001	1.3	78	-0.03	18.31

( # ) = Out of Range

SPCC's out = 0 CCC's out = 0

3E76385a.D M3E3323.M

Tue Nov 03 10:53:47 2015 MS3E

# Continuing Calibration Summary

Job Number: JC7097

Sample: E3E3375-CC3325

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E77540.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3375\3E77540.D Vial: 3  
 Acq On : 2 Nov 2015 10:45 pm Operator: sarad  
 Sample : cc3325-25 Inst : MS3E  
 Misc : op88532,e3e3375, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015  
 Last Update : Mon Nov 02 23:01:31 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	94	0.00	4.66
103	Benzaldehyde	1.079	1.107	-2.6	105	0.08	4.34
104	Acenaphthene-d10a	1.000	1.000	0.0	96	0.00	7.82
105	1,2,4,5-Tetrachlorobenzen	0.466	0.555	-19.1	125	0.08	6.71
106	Phenanthrene-d10a	1.000	1.000	0.0	126	0.00	10.00
107	Atrazine	0.107	0.106	0.9	130	0.00	9.64
108 I	Chrysene-d12a	1.000	1.000	0.0	142	0.00	14.20
109 T	benzidine	0.506	0.555	-9.7	163	0.12	12.16
110 I	Naphthalene-d8a	1.000	1.000	0.0	100	0.00	5.75
111 T	Hydroquinone	0.322	0.324	-0.6	103	0.19	6.21

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76385a.D M3E3323.M Mon Nov 02 23:06:39 2015 MS3E

8.7.27

8

# Continuing Calibration Summary

Job Number: JC7097

Sample: E3E3377-CC3323

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3E77594.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3377\3E77594.D Vial: 2  
 Acq On : 3 Nov 2015 11:27 pm Operator: saraw  
 Sample : cc3323-25 Inst : MS3E  
 Misc : op88596,e3e3377, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015  
 Last Update : Mon Nov 02 23:01:31 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
<hr/>						
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	85	0.05
2 t	1,4-Dioxane	0.474	0.443	6.5	80	-0.05
3 t	Pyridine	1.192	1.023	14.2	75	-0.02
4 t	N-Nitrosodimethylamine	0.695	0.645	7.2	80	-0.02
5 S	2-Fluorophenol	1.281	1.176	8.2	79	0.05
6 t	Indene	2.536	2.388	5.8	81	0.05
7 t	Cumene	3.111	3.114	-0.1	87	0.02
8 S	Phenol-d5	1.552	1.450	6.6	80	0.02
9 t	Phenol	1.698	1.665	1.9	87	0.08
10	Aniline	1.992	1.539	22.7#	66	0.05
11 t	bis(2-Chloroethyl)ether	1.153	1.055	8.5	81	0.05
12 t	2-Chlorophenol	1.511	1.334	11.7	76	0.05
13 t	Decane	1.341	0.904	32.6#	59	0.04
14 t	1,3-Dichlorobenzene	1.633	1.563	4.3	83	0.05
15 t	1,4-Dichlorobenzene	1.679	1.554	7.4	82	0.04
16 t	Benzyl alcohol	0.908	0.831	8.5	81	0.06
17 t	1,2-Dichlorobenzene	1.552	1.457	6.1	82	0.05
18 t	Acetophenone	1.824	1.822	0.1	88	0.06
19 t	2-Methylphenol	1.248	1.129	9.5	77	0.08
20 t	2,2'-oxybis(1-Chloropropyl)	0.500	0.456	8.8	81	0.05
21 t	3&4-Methylphenol	1.333	1.199	10.1	78	0.08
22 t	n-Nitroso-di-n-propylamin	0.847	0.845	0.2	89	0.06
23 t	Hexachloroethane	0.435	0.518	-19.1	103	0.04
24 I	Naphthalene-d8	1.000	1.000	0.0	79	0.06
25 S	Nitrobenzene-d5	0.303	0.376	-24.1#	101	0.07
26 t	Nitrobenzene	0.300	0.346	-15.3	93	0.06
27 t	Quinoline	0.727	0.709	2.5	79	0.07
28 t	Isophorone	0.545	0.571	-4.8	84	0.05
29 t	2-Nitrophenol	0.206	0.212	-2.9	84	0.06
30 t	2,4-Dimethylphenol	0.314	0.294	6.4	74	0.05
31 t	Benzoic acid	0.207	0.277	-33.8#	120	0.11
32 t	bis(2-Chloroethoxy)methan	0.337	0.330	2.1	81	0.06
33 t	2,4-Dichlorophenol	0.276	0.298	-8.0	87	0.08
34 t	2,6-Dichlorophenol	0.278	0.287	-3.2	83	0.07
35	1,3,5-Trichlorobenzene	0.297	0.329	-10.8	93	0.05
36 t	1,2,4-Trichlorobenzene	0.277	0.316	-14.1	93	0.06
37	1,2,3-Trichlorobenzene	0.270	0.308	-14.1	94	0.06
38 t	Naphthalene	1.083	1.066	1.6	80	0.06
39 t	4-Chloroaniline	0.462	0.408	11.7	73	0.07
40 t	2,3-Dichloroaniline	0.342	0.349	-2.0	82	0.09
41 t	Caprolactam	0.142	0.107	24.6#	63	0.09

8.7.28

8

**Continuing Calibration Summary**

Job Number: JC7097

Sample: E3E3377-CC3323

Account: SECORPAE Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

Lab FileID: 3E77594.D

42 t	Hexachlorobutadiene	0.135	0.176	-30.4#	105	0.05	5.96
43 t	4-Chloro-3-methylphenol	0.274	0.298	-8.8	88	0.11	6.43
44 t	2-Methylnaphthalene	0.606	0.604	0.3	80	0.07	6.57
45 t	1-Methylnaphthalene	0.623	0.633	-1.6	82	0.07	6.68
46 t	Dimethylnaphthalene	0.631	0.644	-2.1	84	0.09	7.33
47 I	Acenaphthene-d10	1.000	1.000	0.0	98	0.06	7.89
48 t	Hexachlorocyclopentadiene	0.319	0.227	28.8#	64	0.03	6.75
49 t	2,4,6-Trichlorophenol	0.335	0.343	-2.4	94	0.06	6.92
50 t	2,4,5-Trichlorophenol	0.346	0.354	-2.3	93	0.08	6.98
51 S	2-Fluorobiphenyl	1.266	1.328	-4.9	96	0.04	7.01
52 t	2-Chloronaphthalene	1.146	1.053	8.1	86	0.05	7.16
53 t	Biphenyl	1.590	1.432	9.9	84	0.05	7.13
54 t	2-Nitroaniline	0.302	0.316	-4.6	97	0.07	7.30
55 t	Dimethylphthalate	1.285	1.242	3.3	89	0.06	7.54
56 t	Acenaphthylene	1.963	1.767	10.0	82	0.06	7.70
57 t	2,6-Dinitrotoluene	0.295	0.288	2.4	90	0.08	7.62
58 t	3-Nitroaniline	0.389	0.328	15.7	77	0.09	7.86
59 t	Acenaphthene	1.232	1.110	9.9	84	0.06	7.93
-----		True	Calc.	% Drift	-----		
60 t	2,4-Dinitrophenol	50.000	52.885	-5.8	107	0.06	8.02
-----		AvgRF	CCRF	% Dev	-----		
61 t	4-Nitrophenol	0.153	0.189	-23.5#	113	0.17	8.18
62 t	Dibenzofuran	1.682	1.528	9.2	84	0.07	8.18
63 t	2,4-Dinitrotoluene	0.398	0.399	-0.3	88	0.10	8.19
64	2,3,4,6-Tetrachlorophenol	0.269	0.278	-3.3	92	0.10	8.38
65 t	Diethylphthalate	1.372	1.271	7.4	87	0.08	8.54
66 t	Fluorene	1.356	1.265	6.7	85	0.08	8.66
67 t	4-Chlorophenyl-phenylether	0.539	0.581	-7.8	98	0.08	8.67
68 t	4-Nitroaniline	0.401	0.315	21.4#	69	0.08	8.73
69 I	Phenanthrene-d10	1.000	1.000	0.0	86	0.07	10.07
70 t	4,6-Dinitro-2-methylpheno	0.132	0.145	-9.8	101	0.08	8.79
71 t	n-Nitrosodiphenylamine	0.618	0.578	6.5	86	0.05	8.86
72 t	1,2-Diphenylhydrazine	0.708	0.715	-1.0	93	0.04	8.91
73 S	2,4,6-Tribromophenol	0.130	0.130	0.0	92	0.05	9.03
74 t	4-Bromophenyl-phenylether	0.195	0.209	-7.2	98	0.05	9.40
75 t	Hexachlorobenzene	0.241	0.254	-5.4	97	0.06	9.50
76 t	Pentachlorophenol	0.150	0.135	10.0	80	0.09	9.82
77 t	Phenanthrene	1.171	1.082	7.6	86	0.07	10.11
78 t	Anthracene	1.194	1.113	6.8	86	0.07	10.19
79 t	Carbazole	1.152	1.035	10.2	84	0.10	10.47
80 t	Di-n-butylphthalate	1.424	1.311	7.9	84	0.08	11.07
81 t	Fluoranthene	1.117	1.129	-1.1	94	0.12	11.97
82 t	Octadecane	0.521	0.356	31.7#	63	0.05	10.00
83 I	Chrysene-d12	1.000	1.000	0.0	98	0.07	14.27
84 t	Pyrene	1.283	1.153	10.1	94	0.03	12.33
85 S	Terphenyl-d14	0.874	0.880	-0.7	115	0.04	12.63
86 t	Butylbenzylphthalate	0.687	0.580	15.6	88	0.04	13.45
87	Butyl stearate	0.414	0.253	38.9#	64	0.04	13.61
88 t	Benzo[a]anthracene	1.120	1.062	5.2	100	0.07	14.26
89 t	3,3'-Dichlorobenzidine	0.452	0.444	1.8	101	0.07	14.25
90 t	Chrysene	1.056	1.001	5.2	98	0.07	14.31
91 t	bis(2-Ethylhexyl)phthalat	0.945	0.783	17.1	86	0.05	14.41
92 I	Perylene-d12	1.000	1.000	0.0	90	0.07	16.40
93 t	Di-n-octylphthalate	1.561	1.437	7.9	88	0.07	15.39

**Continuing Calibration Summary**

Job Number: JC7097

Sample: E3E3377-CC3323

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E77594.D

Project: Sunoco - Marcus Hook Facility, PA

94 t	Benzo[b]fluoranthene	1.171	1.155	1.4	95	0.06	15.88
95 t	Benzo[k]fluoranthene	1.069	1.041	2.6	91	0.06	15.92
96 t	Benzo[a]pyrene	1.029	1.014	1.5	95	0.07	16.32
97 t	Indeno[1,2,3-cd]pyrene	1.015	1.212	-19.4	116	0.11	17.98
98 t	Dibenz(a,h)acridine	0.923	0.940	-1.8	97	0.11	17.61
99 t	Dibenz[a,h]anthracene	1.027	1.055	-2.7	96	0.10	18.00
100 t	7,12-Dimethylbenz(a)anthr	0.539	0.510	5.4	86	0.04	15.86
101 t	Benzo[g,h,i]perylene	1.014	1.017	-0.3	97	0.08	18.42

( # ) = Out of Range

SPCC's out = 0 CCC's out = 0

3E76385a.D M3E3323.M

Wed Nov 04 01:04:37 2015 MS3E

# Continuing Calibration Summary

Job Number: JC7097

Sample: E3E3377-CC3325

Account: SECORPAE Stantec Consulting Services Inc.

Lab FileID: 3E77595.D

Project: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3E3377\3E77595.D Vial: 3  
 Acq On : 3 Nov 2015 11:58 pm Operator: saraw  
 Sample : cc3325-25 Inst : MS3E  
 Misc : op88596,e3e3377, Multiplr: 1.00  
 MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M3E3323.M (RTE Integrator)  
 Title : Semi Volatile GC/MS,zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015  
 Last Update : Mon Nov 02 23:01:31 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	114	0.05	4.72
103	Benzaldehyde	1.079	1.055	2.2	122	0.14	4.39
104	Acenaphthene-d10a	1.000	1.000	0.0	109	0.06	7.89
105	1,2,4,5-Tetrachlorobenzen	0.466	0.554	-18.9	141	0.14	6.77
106	Phenanthrene-d10a	1.000	1.000	0.0	139	0.07	10.07
107	Atrazine	0.107	0.105	1.9	142	0.06	9.71
108 I	Chrysene-d12a	1.000	1.000	0.0	160	0.07	14.27
109 T	benzidine	0.506	0.485	4.2	160	0.20	12.23
110 I	Naphthalene-d8a	1.000	1.000	0.0	114	0.06	5.81
111 T	Hydroquinone	0.322	0.309	4.0	112	0.24	6.27

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 3E76385a.D M3E3323.M Wed Nov 04 01:04:38 2015 MS3E



## GC/MS Semi-volatiles

---

### Raw Data

---

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77611.D  
 Acq On : 4 Nov 2015 6:53 am  
 Operator : sarad  
 Sample : jc7097-1  
 Misc : op88470,e3e3377,17.1  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Nov 04 11:39:00 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration

9.1.1

6

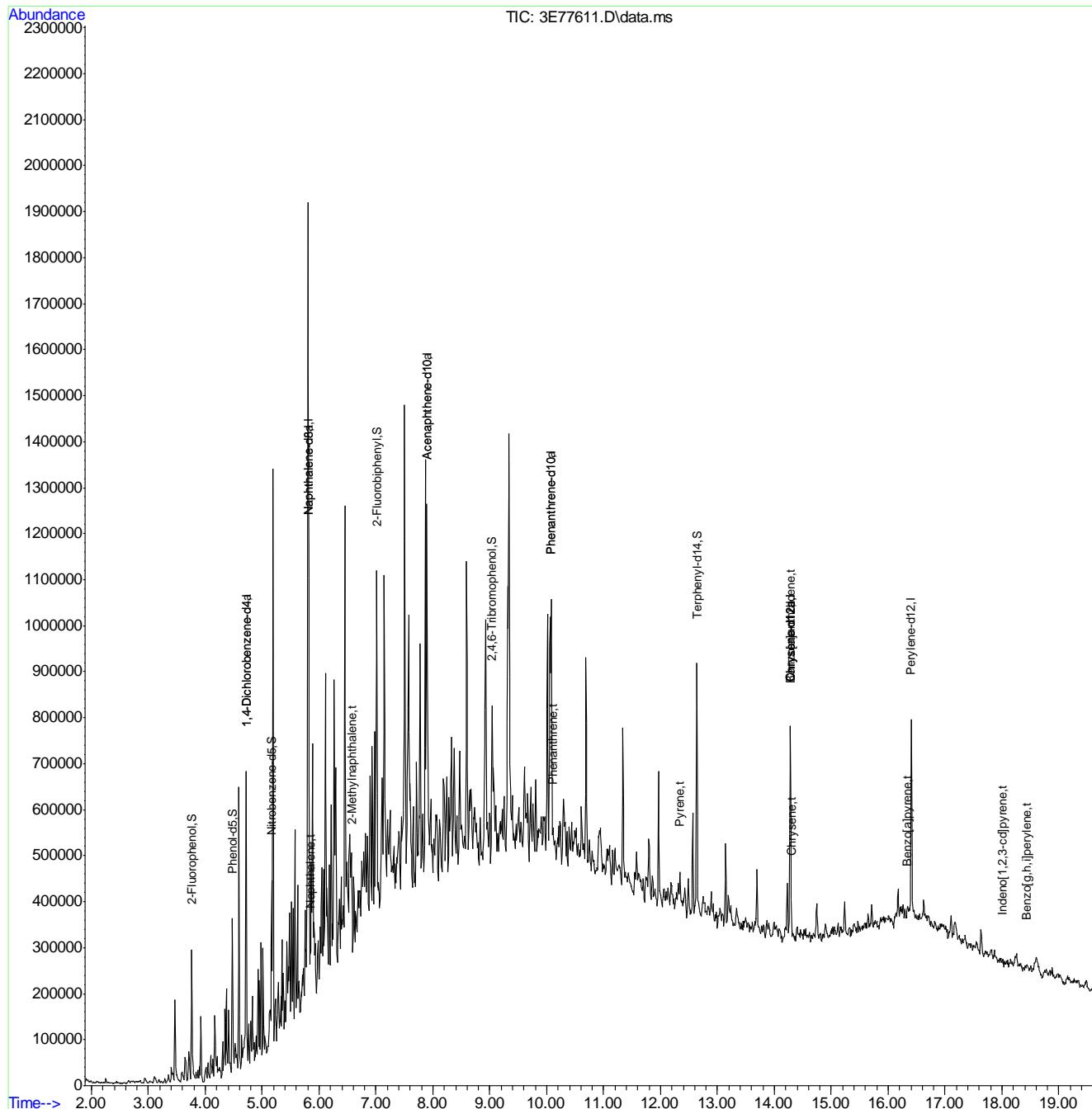
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.716	152	76446	40.00	ppm	0.05
24) Naphthalene-d8	5.818	136	292218	40.00	ppm	0.06
47) Acenaphthene-d10	7.893	164	164644	40.00	ppm	0.07
69) Phenanthrene-d10	10.081	188	226549	40.00	ppm	0.08
83) Chrysene-d12	14.285	240	195124	40.00	ppm	0.09
92) Perylene-d12	16.414	264	195045	40.00	ppm	0.09
102) 1,4-Dichlorobenzene-d4a	4.716	152	76446	40.00	ppm	0.05
104) Acenaphthene-d10a	7.893	164	164644	40.00	ppm	0.07
106) Phenanthrene-d10a	10.081	188	226549	40.00	ppm	0.08
108) Chrysene-d12a	14.285	240	195124	40.00	ppm	0.09
110) Naphthalene-d8a	5.818	136	292218	40.00	ppm	0.06
112) Chrysene-d12b	14.285	240	195124	40.00	ppm	0.09
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.759	112	84456	34.50	ppm	0.05
Spiked Amount	50.000		Recovery	=	69.00%	
8) Phenol-d5	4.476	99	104446	35.21	ppm	0.03
Spiked Amount	50.000		Recovery	=	70.42%	
25) Nitrobenzene-d5	5.165	82	92402	41.81	ppm	0.07
Spiked Amount	50.000		Recovery	=	83.62%	
51) 2-Fluorobiphenyl	7.011	172	213840	41.04	ppm	0.05
Spiked Amount	50.000		Recovery	=	82.08%	
73) 2,4,6-Tribromophenol	9.038	330	35100	47.49	ppm	0.06
Spiked Amount	50.000		Recovery	=	94.98%	
85) Terphenyl-d14	12.638	244	181544	42.56	ppm	0.05
Spiked Amount	50.000		Recovery	=	85.12%	
<hr/>						
Target Compounds						
38) Naphthalene	5.839	128	7331	0.93	ppm	96
44) 2-Methylnaphthalene	6.578	141	16352	3.69	ppm	96
77) Phenanthrene	10.118	178	7661	1.15	ppm	96
84) Pyrene	12.338	202	36888	5.89	ppm	96
88) Benzo[a]anthracene	14.274	228	3252	0.60	ppm	75
90) Chrysene	14.301	228	5197	1.01	ppm	71
96) Benzo[a]pyrene	16.333	252	3241	0.65	ppm	84
97) Indeno[1,2,3-cd]pyrene	17.997	276	2246	0.45	ppm	88
101) Benzo[g,h,i]perylene	18.441	276	4517	0.91	ppm	70

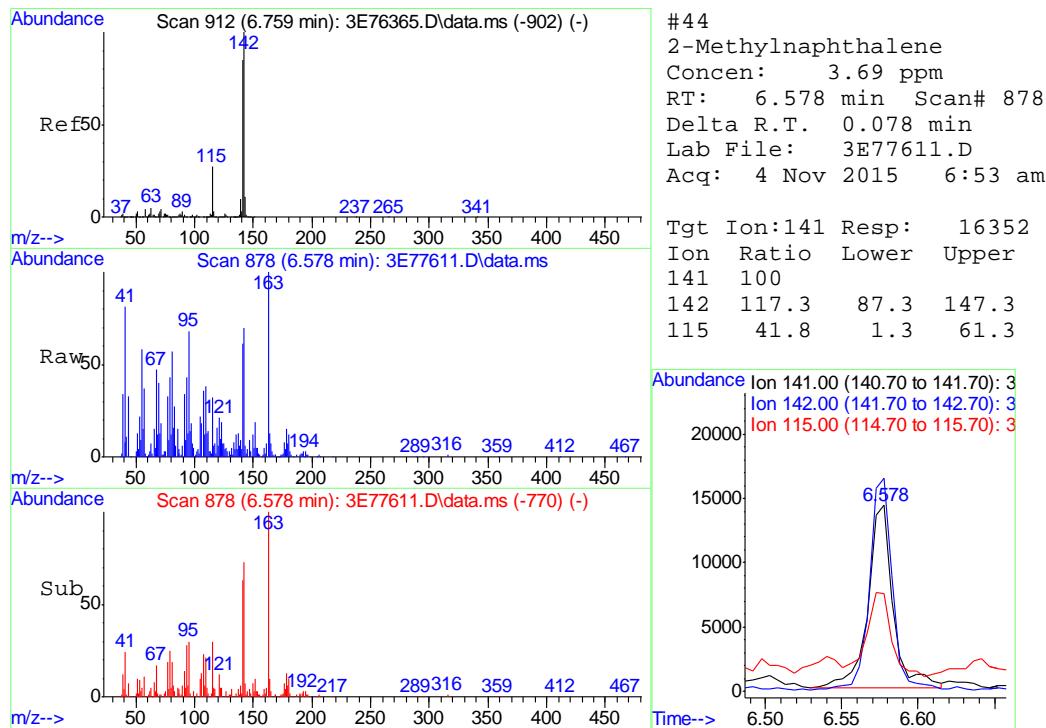
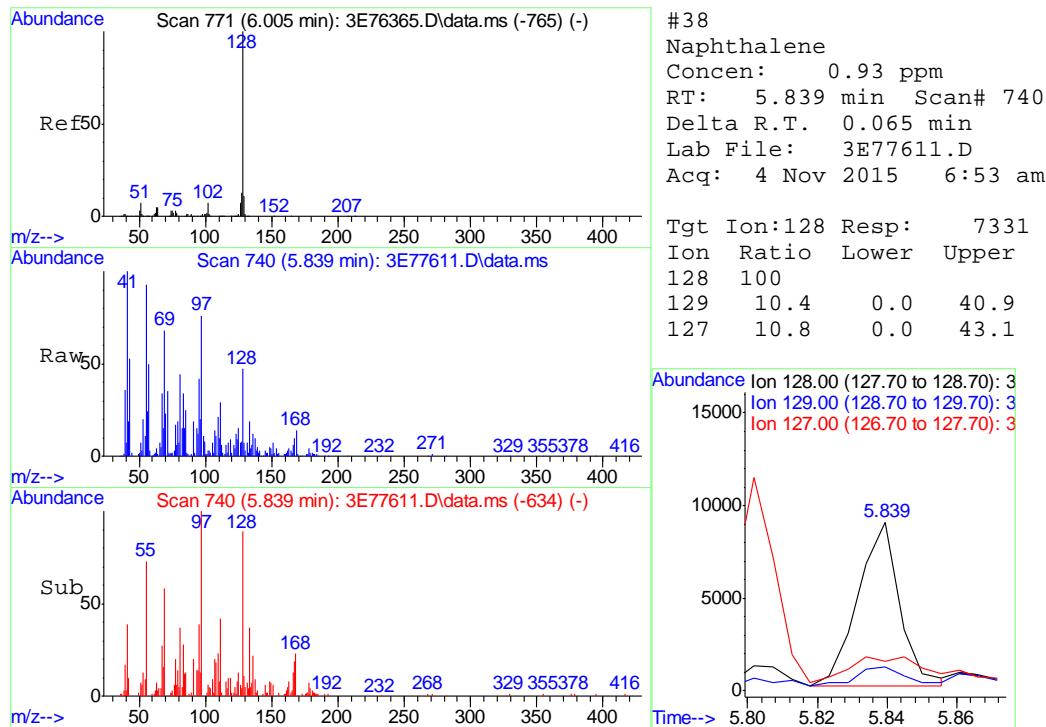
(#) = qualifier out of range (m) = manual integration (+) = signals summed

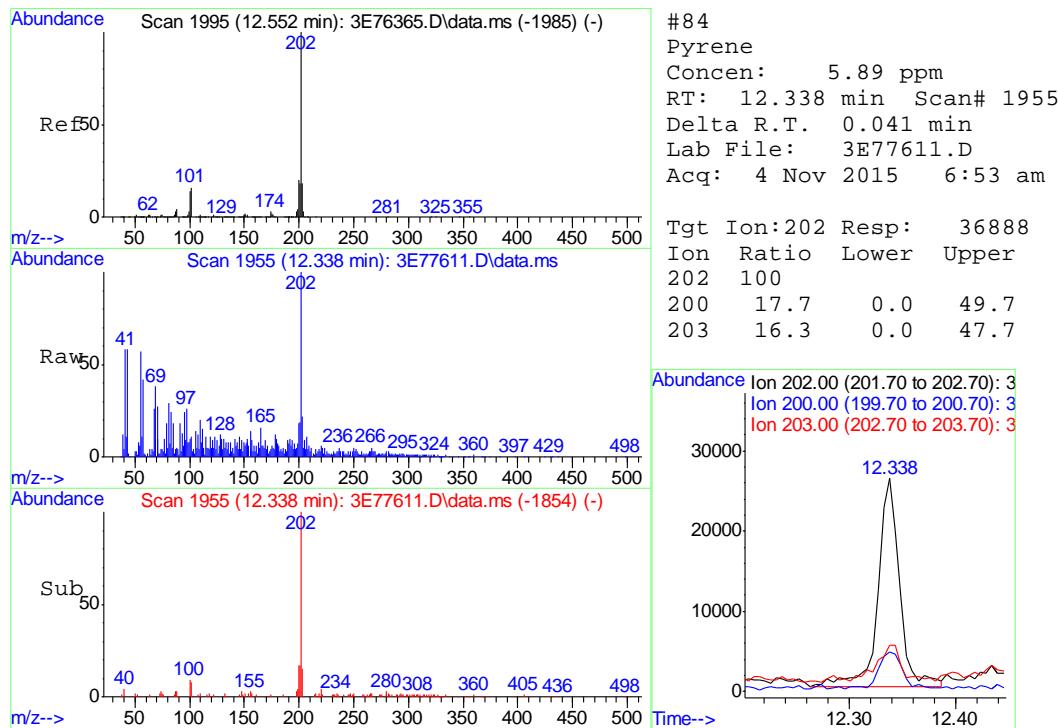
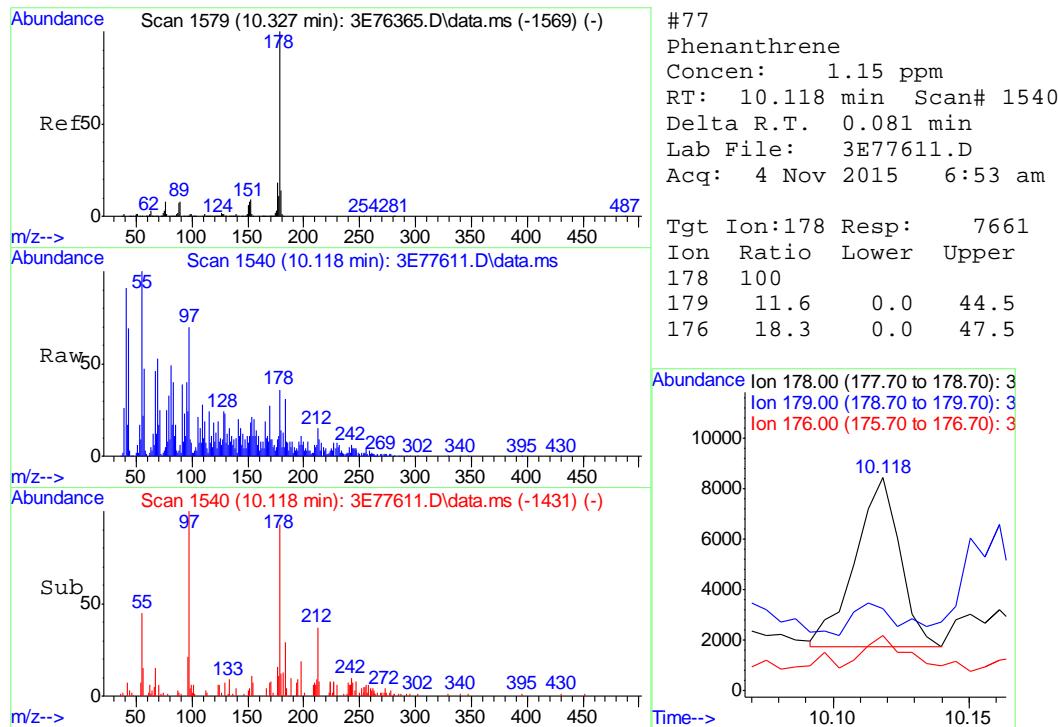
## Quantitation Report (QT Reviewed)

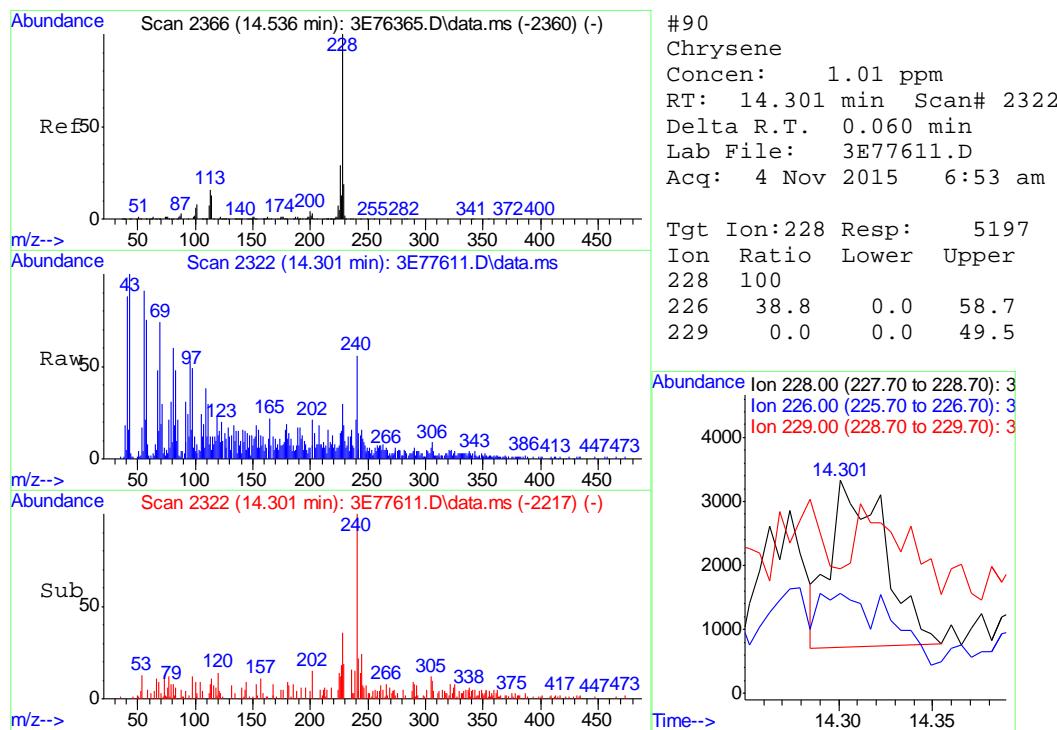
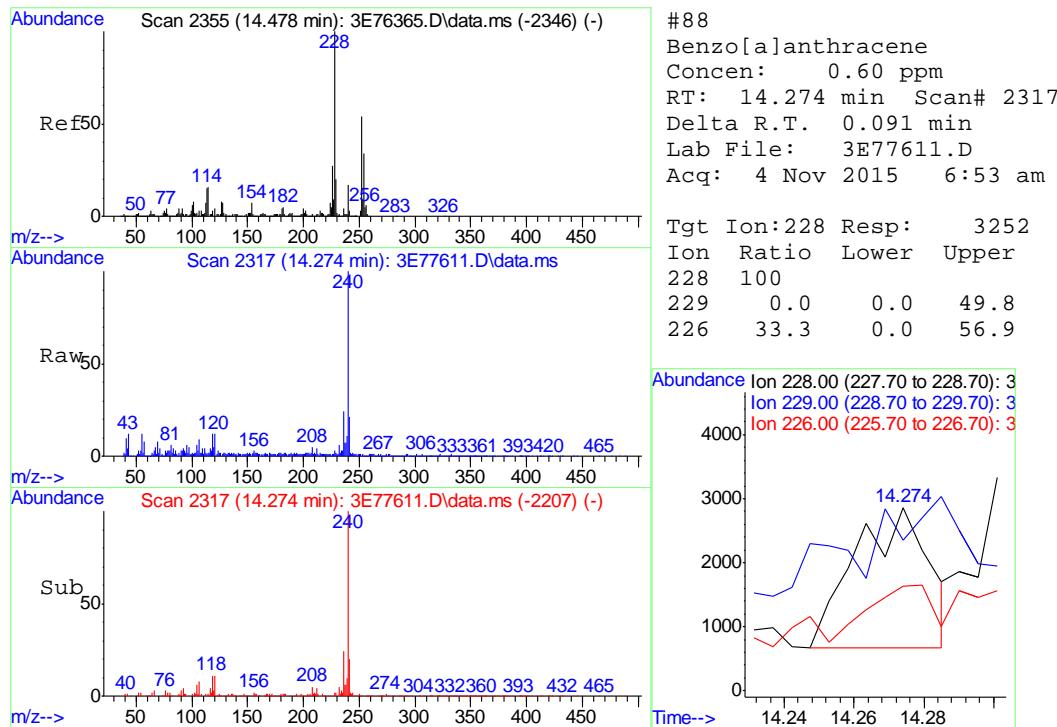
Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77611.D  
 Acq On : 4 Nov 2015 6:53 am  
 Operator : sarad  
 Sample : jc7097-1  
 Misc : op88470,e3e3377,17.1  
 ALS Vial : 19 Sample Multiplier: 1

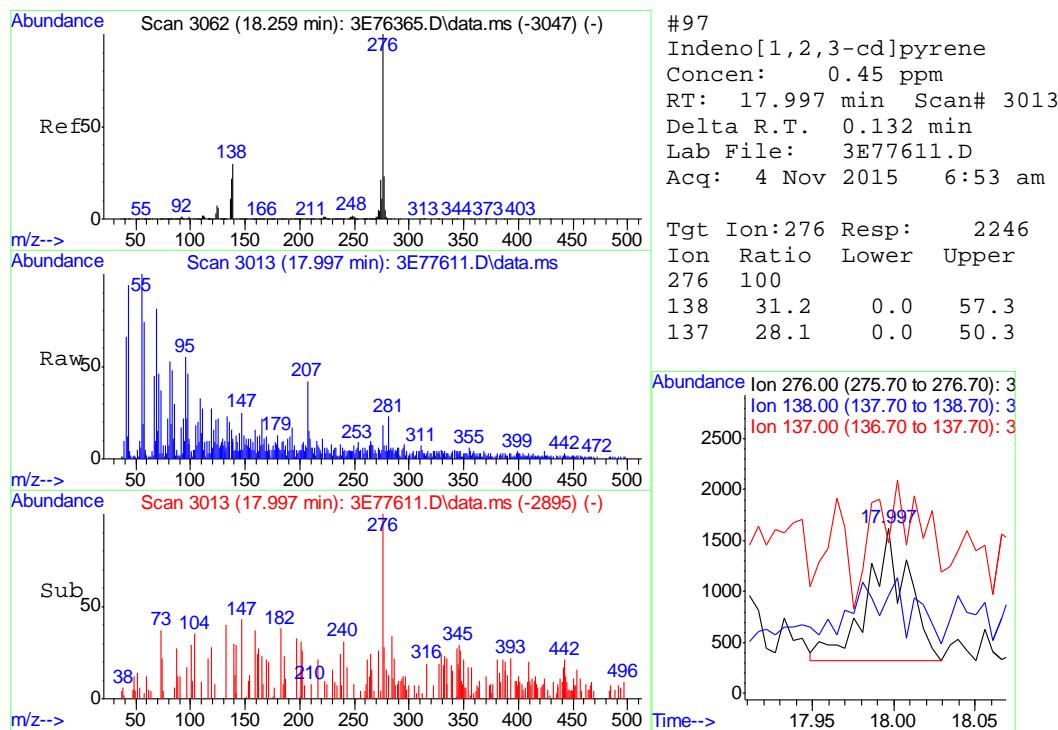
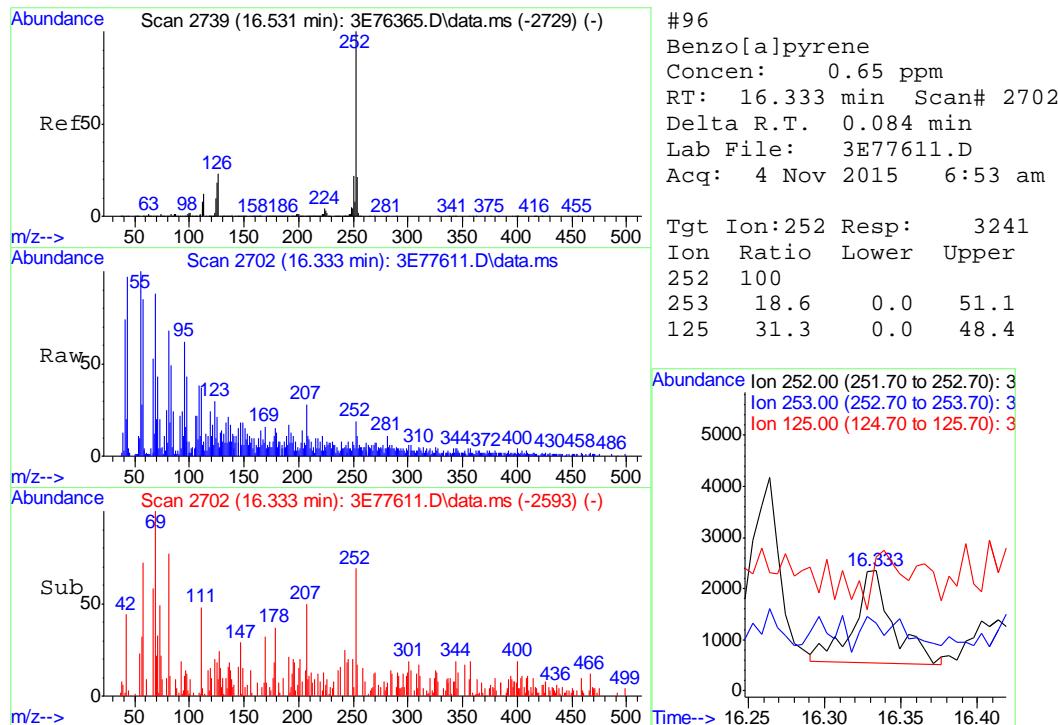
Quant Time: Nov 04 11:39:00 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M  
 Quant Title : Semi Volatile GC/MS, zB-5MSI 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015  
 QLast Update : Mon Nov 02 23:01:31 2015  
 Response via : Initial Calibration

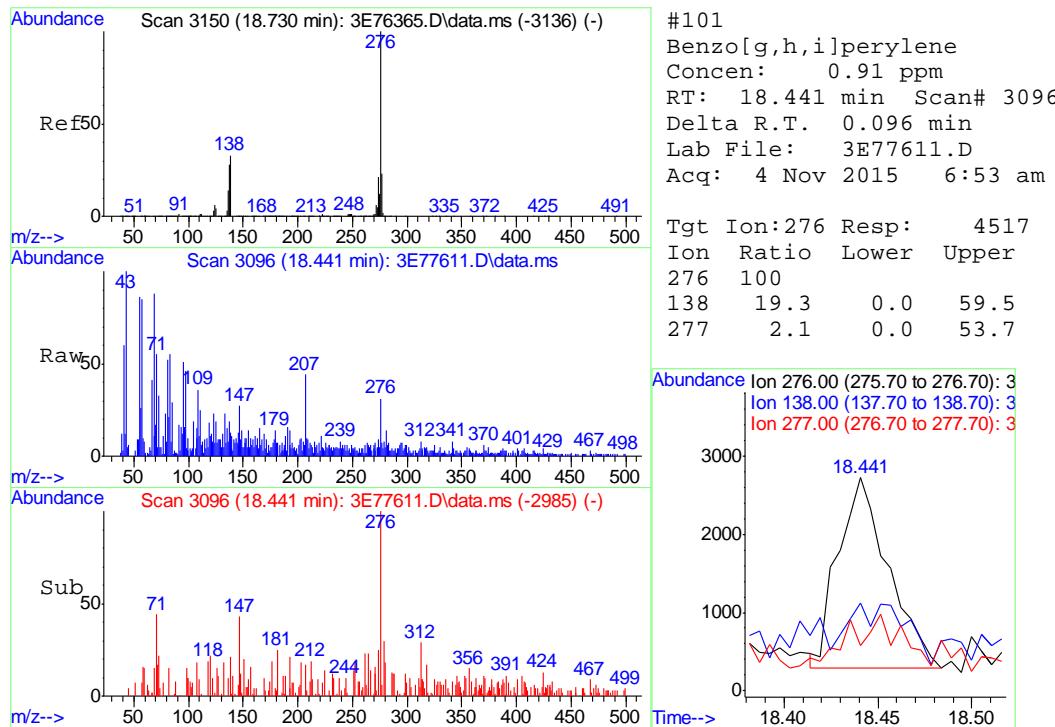












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m3443\  
 Data File : 2m78949.D  
 Acq On : 5 Nov 2015 8:15 pm  
 Operator : ashleyn  
 Sample : jc7097-1  
 Misc : op88470,e2m3443,17.1,,,1,2  
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Nov 06 11:31:56 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M2M3440.M  
 Quant Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 QLast Update : Wed Nov 04 22:59:01 2015  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.982	152	136852	40.00	ppm	0.00
24) Naphthalene-d8	6.126	136	487028	40.00	ppm	0.00
47) Acenaphthene-d10	8.255	164	284121	40.00	ppm	0.00
69) Phenanthrene-d10	10.448	188	510509	40.00	ppm	0.00
83) Chrysene-d12	14.636	240	559579	40.00	ppm	-0.01
92) Perylene-d12	16.765	264	512458	40.00	ppm	0.00
102) 1,4-Dichlorobenzene-d4a	4.982	152	136852	40.00	ppm	0.00
104) Acenaphthene-d10a	8.255	164	284121	40.00	ppm	0.00
106) Chrysene-d12a	14.636	240	559579	40.00	ppm	0.00
108) Phenanthrene-d10a	10.448	188	510509	40.00	ppm	0.00
110) Naphthalene-d8a	6.126	136	487028	40.00	ppm	0.00
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.987	112	98162	16.25	ppm	0.00
Spiked Amount	50.000		Recovery	=	32.50%	
8) Phenol-d5	4.688	99	140588	16.16	ppm	0.00
Spiked Amount	50.000		Recovery	=	32.32%	
25) Nitrobenzene-d5	5.436	82	121112	16.09	ppm	-0.01
Spiked Amount	50.000		Recovery	=	32.18%	
51) 2-Fluorobiphenyl	7.357	172	195367	18.29	ppm	0.00
Spiked Amount	50.000		Recovery	=	36.58%	
73) 2,4,6-Tribromophenol	9.394	330	28395	20.68	ppm	0.00
Spiked Amount	50.000		Recovery	=	41.36%	
85) Terphenyl-d14	13.005	244	240473	18.70	ppm	0.00
Spiked Amount	50.000		Recovery	=	37.40%	
<hr/>						
Target Compounds						
38) Naphthalene	6.148	128	6390	0.40	ppm	91
44) 2-Methylnaphthalene	6.907	141	13648	1.77	ppm	92
77) Phenanthrene	10.486	178	9457	0.58	ppm	86
84) Pyrene	12.700	202	46551	2.27	ppm	97
88) Benzo[a]anthracene	14.625	228	8810	0.45	ppm	94
90) Chrysene	14.679	228	11454	0.60	ppm	87

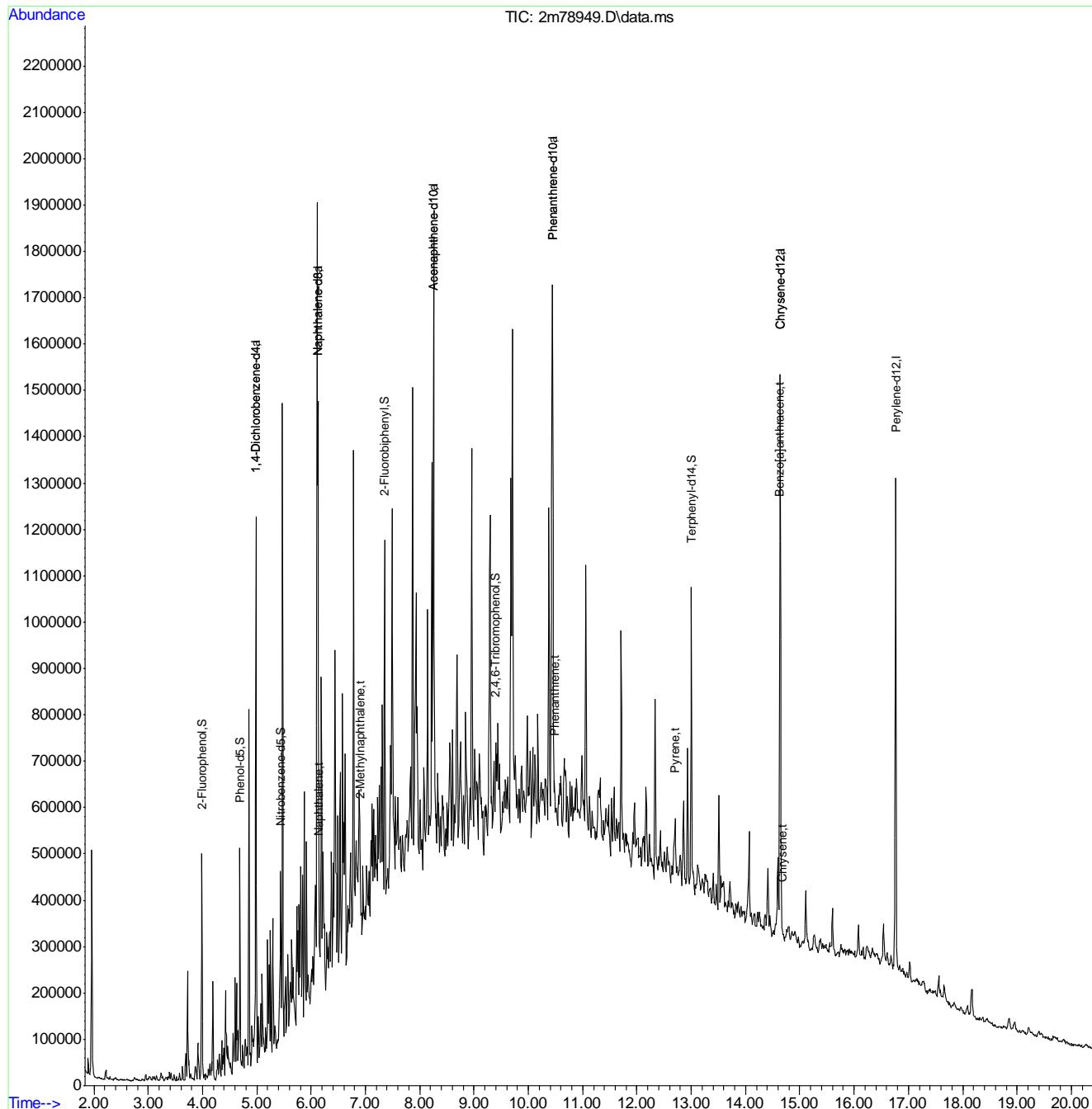
(#) = qualifier out of range (m) = manual integration (+) = signals summed

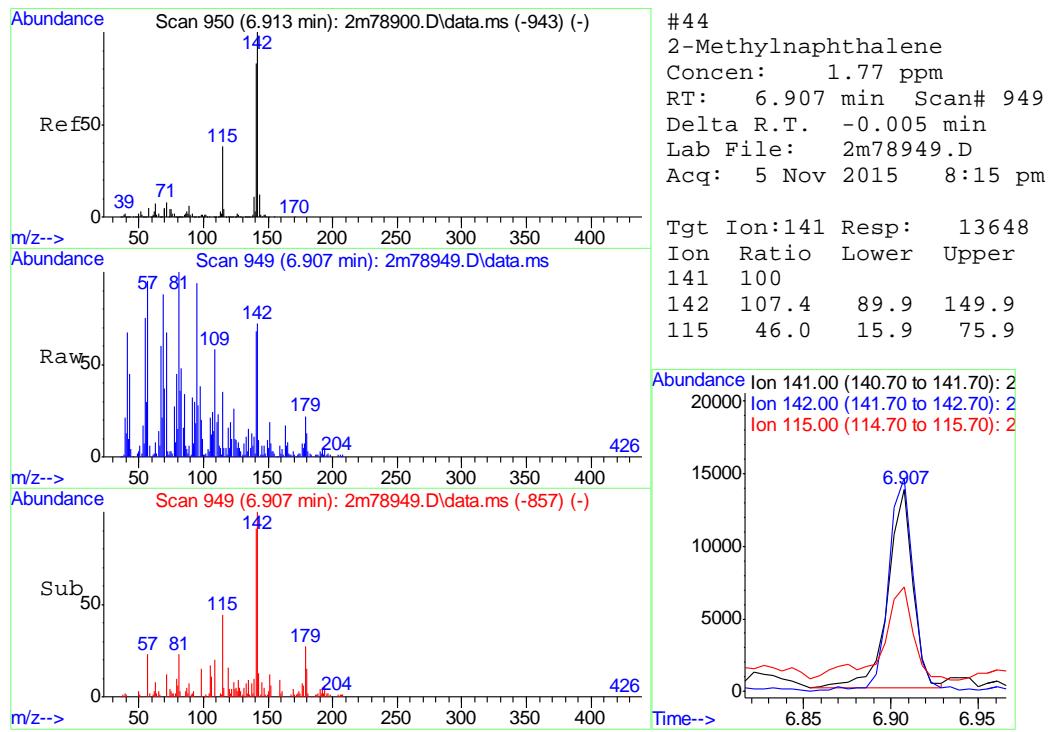
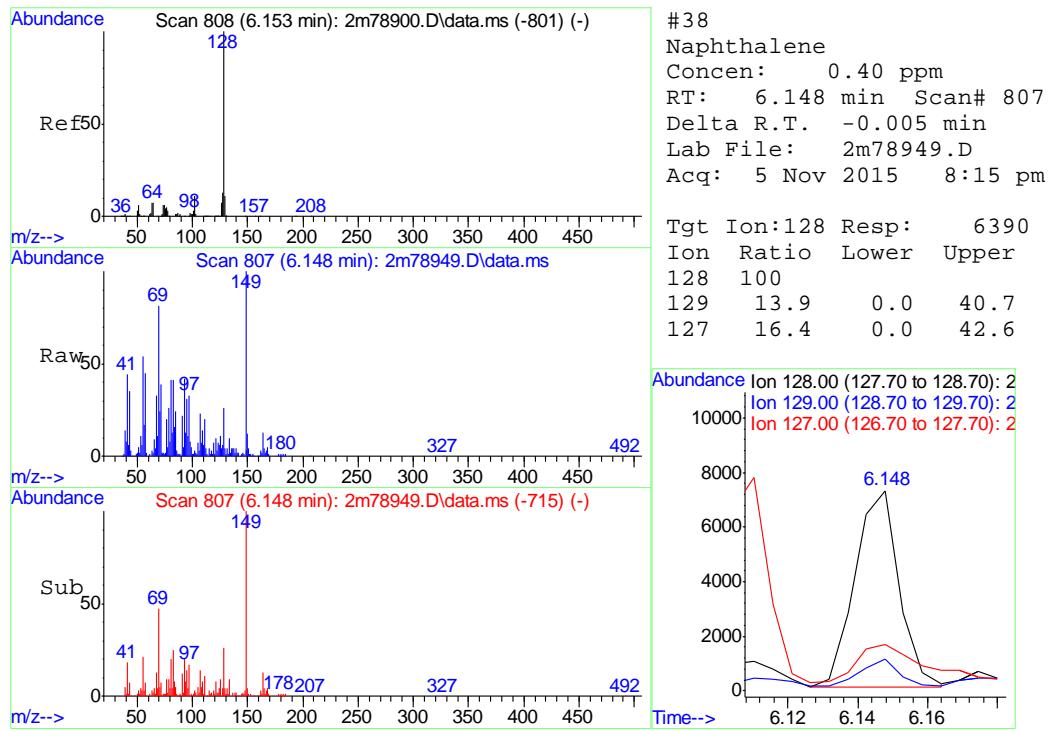
9.1.2  
9

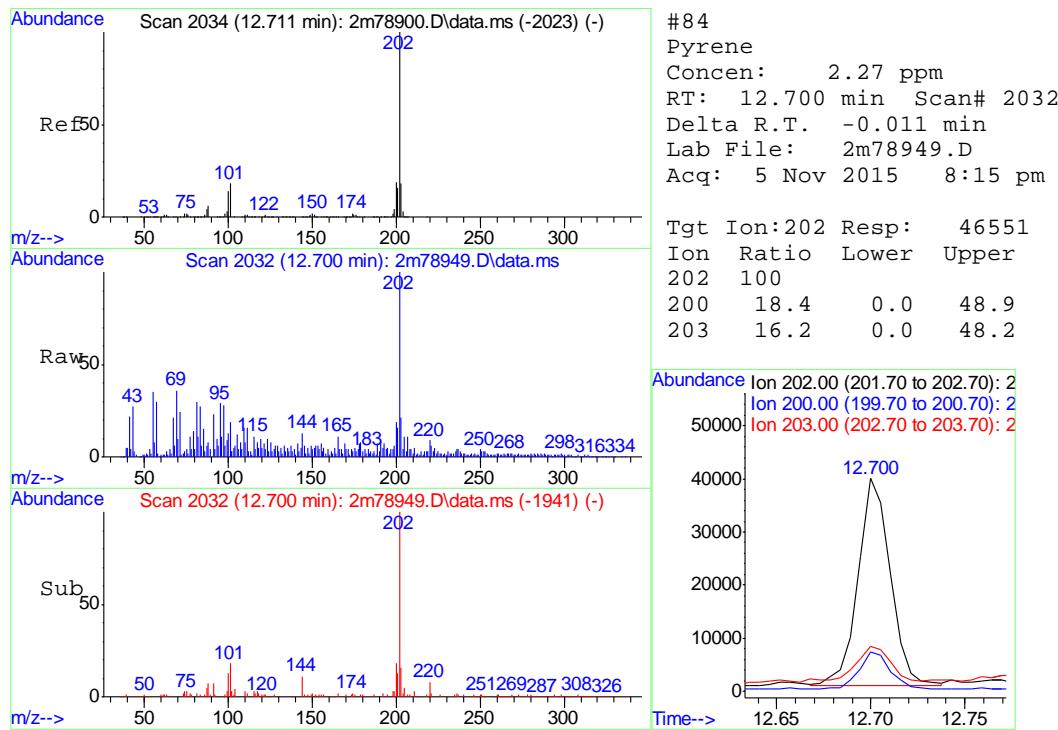
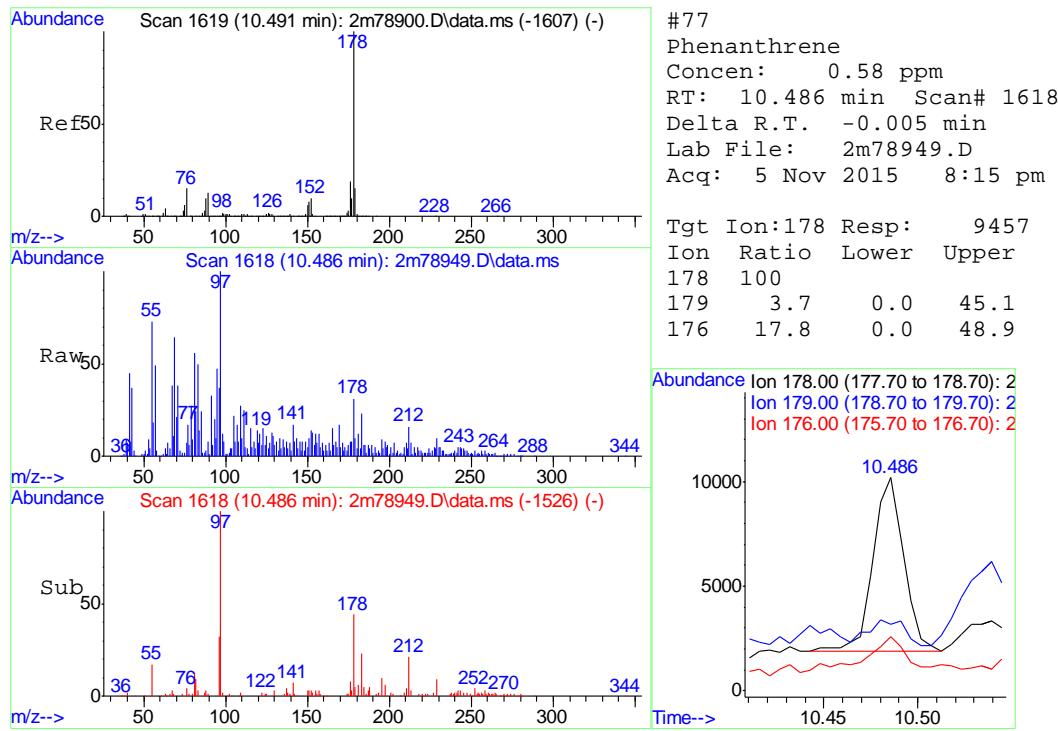
## Quantitation Report (QT Reviewed)

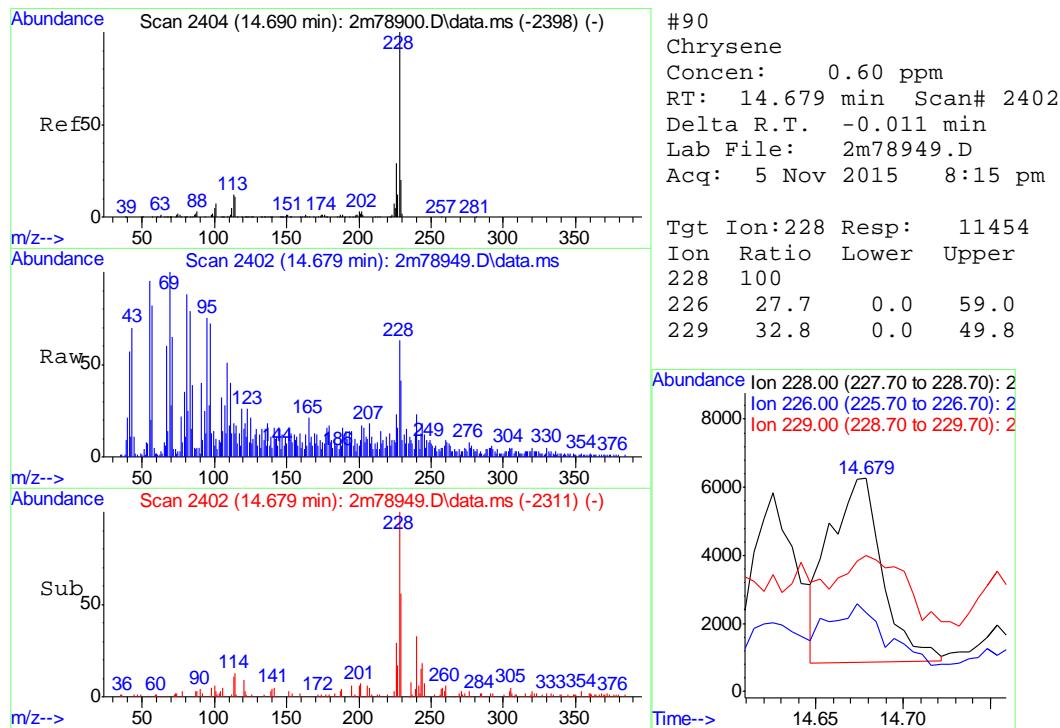
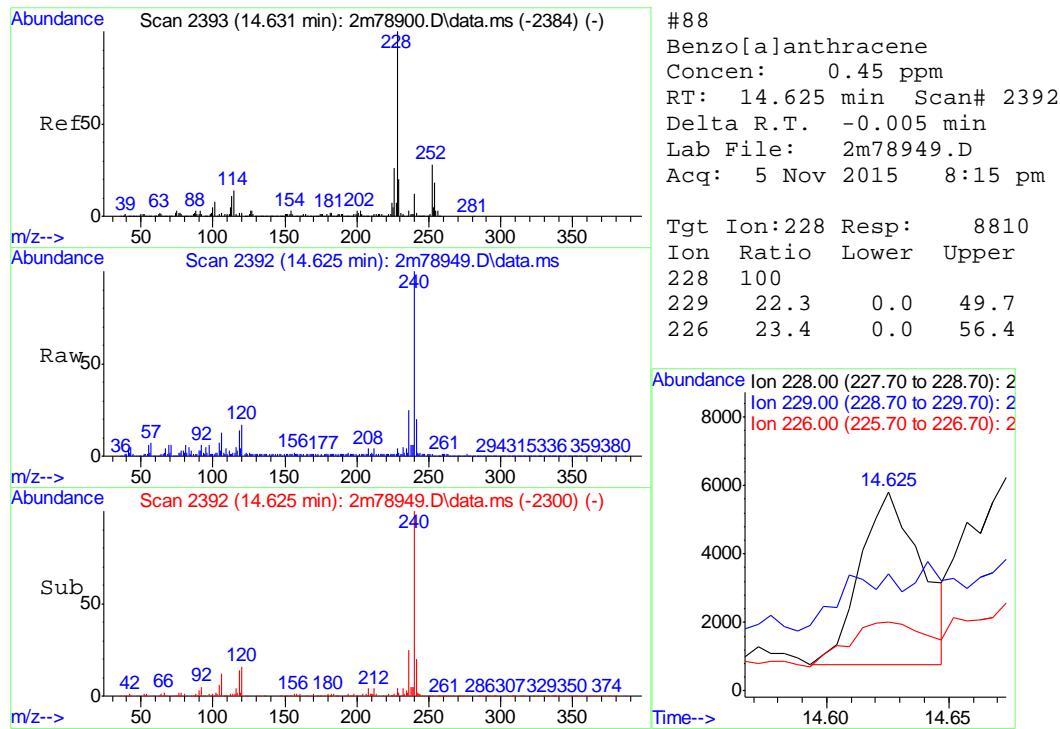
Data Path : C:\msdchem\1\DATA\e2m3443\  
 Data File : 2m78949.D  
 Acq On : 5 Nov 2015 8:15 pm  
 Operator : ashleyn  
 Sample : jc7097-1  
 Misc : op88470,e2m3443,17.1,,,1,2  
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Nov 06 11:31:56 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M2M3440.M  
 Quant Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 QLast Update : Wed Nov 04 22:59:01 2015  
 Response via : Initial Calibration









## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77603.D  
 Acq On : 4 Nov 2015 3:27 am  
 Operator : sarad  
 Sample : jc7097-2  
 Misc : op88470,e3e3377,15.1  
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 04 11:03:07 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration

9.1.3

9

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.716	152	89483	40.00	ppm	0.05
24) Naphthalene-d8	5.813	136	341034	40.00	ppm	0.06
47) Acenaphthene-d10	7.888	164	200146	40.00	ppm	0.06
69) Phenanthrene-d10	10.070	188	292668	40.00	ppm	0.07
83) Chrysene-d12	14.269	240	258350	40.00	ppm	0.07
92) Perylene-d12	16.398	264	249586	40.00	ppm	0.07
102) 1,4-Dichlorobenzene-d4a	4.716	152	89483	40.00	ppm	0.05
104) Acenaphthene-d10a	7.888	164	200146	40.00	ppm	0.06
106) Phenanthrene-d10a	10.070	188	292668	40.00	ppm	0.07
108) Chrysene-d12a	14.269	240	258350	40.00	ppm	0.07
110) Naphthalene-d8a	5.813	136	341034	40.00	ppm	0.06
112) Chrysene-d12b	14.269	240	258350	40.00	ppm	0.07
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.753	112	106218	37.07	ppm	0.05
Spiked Amount	50.000		Recovery	=	74.14%	
8) Phenol-d5	4.470	99	126934	36.55	ppm	0.02
Spiked Amount	50.000		Recovery	=	73.10%	
25) Nitrobenzene-d5	5.165	82	102229	39.64	ppm	0.07
Spiked Amount	50.000		Recovery	=	79.28%	
51) 2-Fluorobiphenyl	7.011	172	244032	38.53	ppm	0.05
Spiked Amount	50.000		Recovery	=	77.06%	
73) 2,4,6-Tribromophenol	9.027	330	41323	43.28	ppm	0.05
Spiked Amount	50.000		Recovery	=	86.56%	
85) Terphenyl-d14	12.627	244	228144	40.39	ppm	0.04
Spiked Amount	50.000		Recovery	=	80.78%	
<hr/>						
Target Compounds						
38) Naphthalene	5.834	128	3666	0.40	ppm	83
44) 2-Methylnaphthalene	6.572	141	5537	1.07	ppm	95
66) Fluorene	8.664	166	11409	1.68	ppm	72
77) Phenanthrene	10.108	178	15340	1.79	ppm	91
84) Pyrene	12.327	202	5410	0.65	ppm	92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77603.D  
 Acq On : 4 Nov 2015 3:27 am  
 Operator : sarad  
 Sample : jc7097-2  
 Misc : op88470,e3e3377,15.1  
 ALS Vial : 11 Sample Multiplier: 1

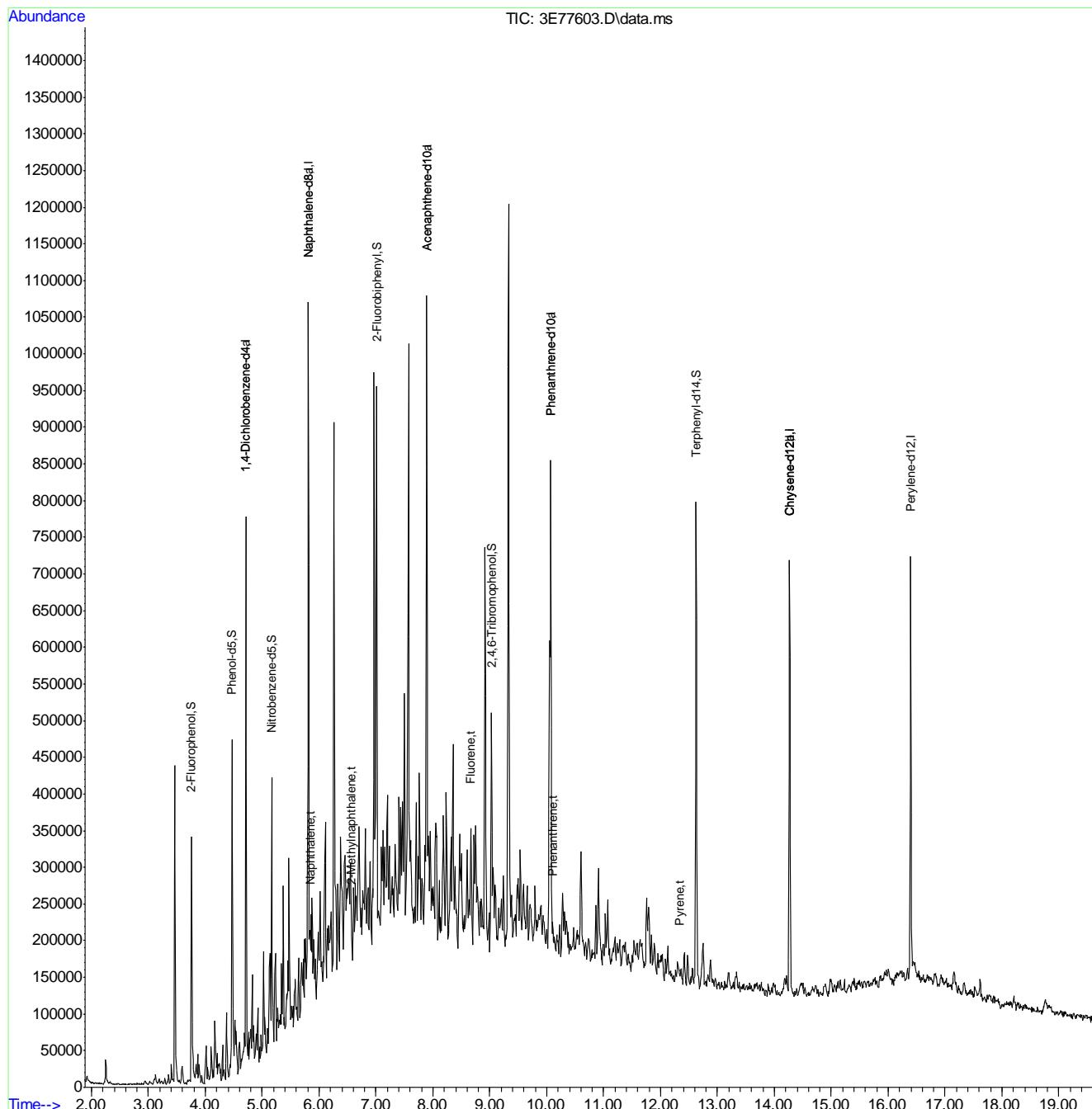
Quant Time: Nov 04 11:03:07 2015

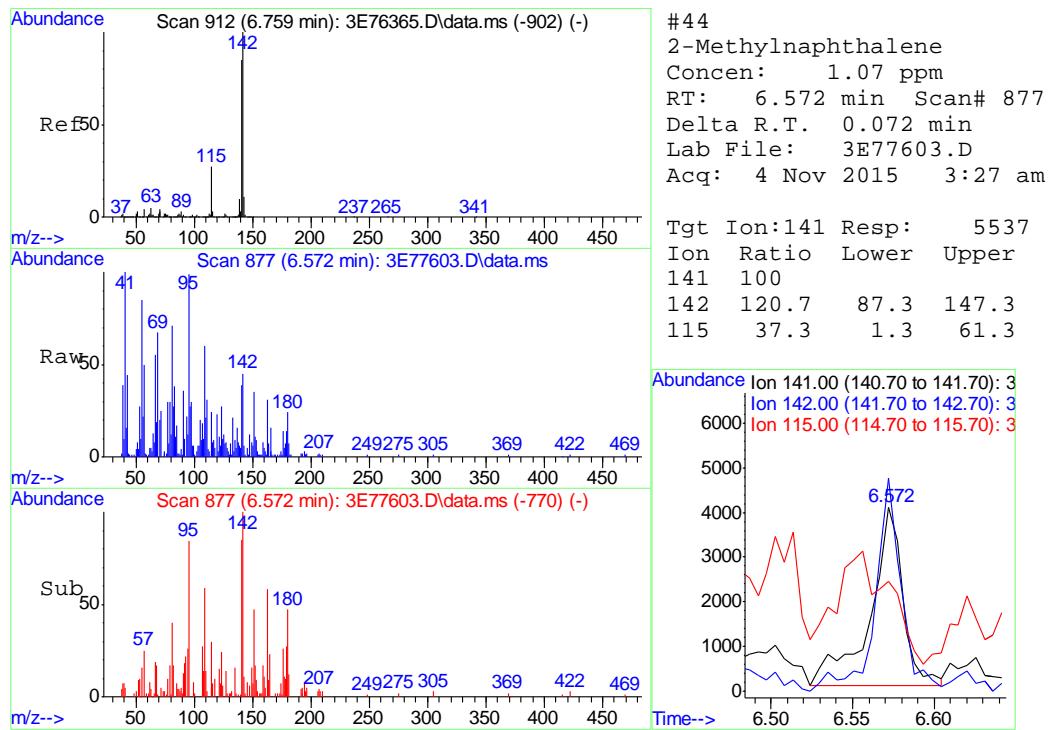
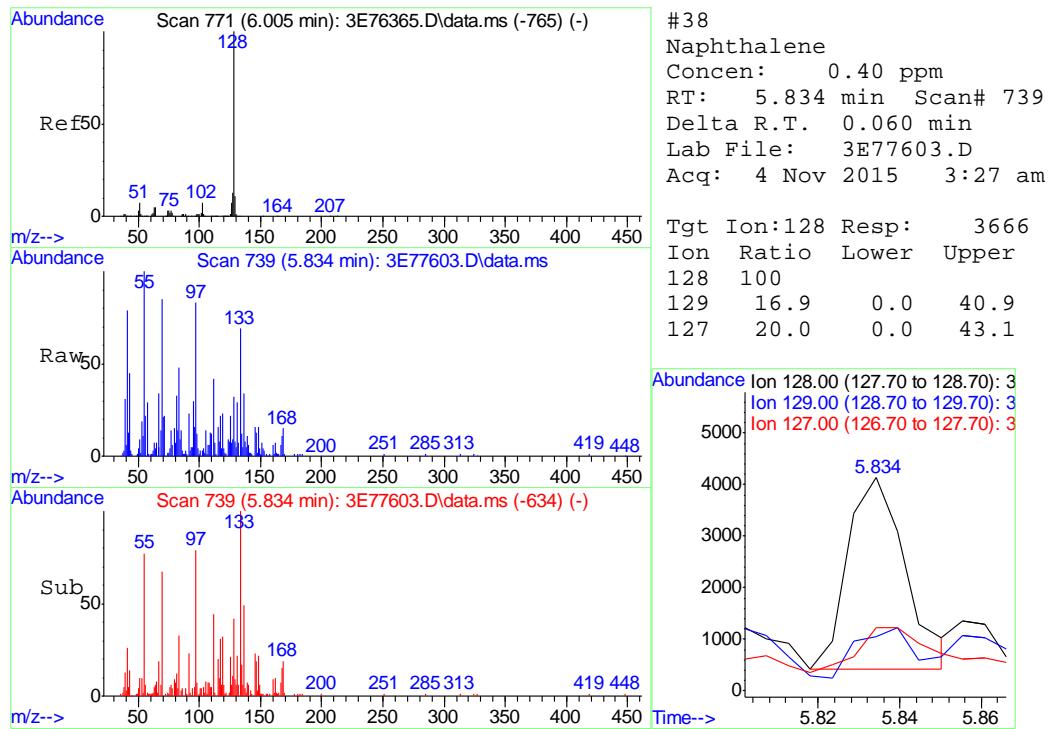
Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

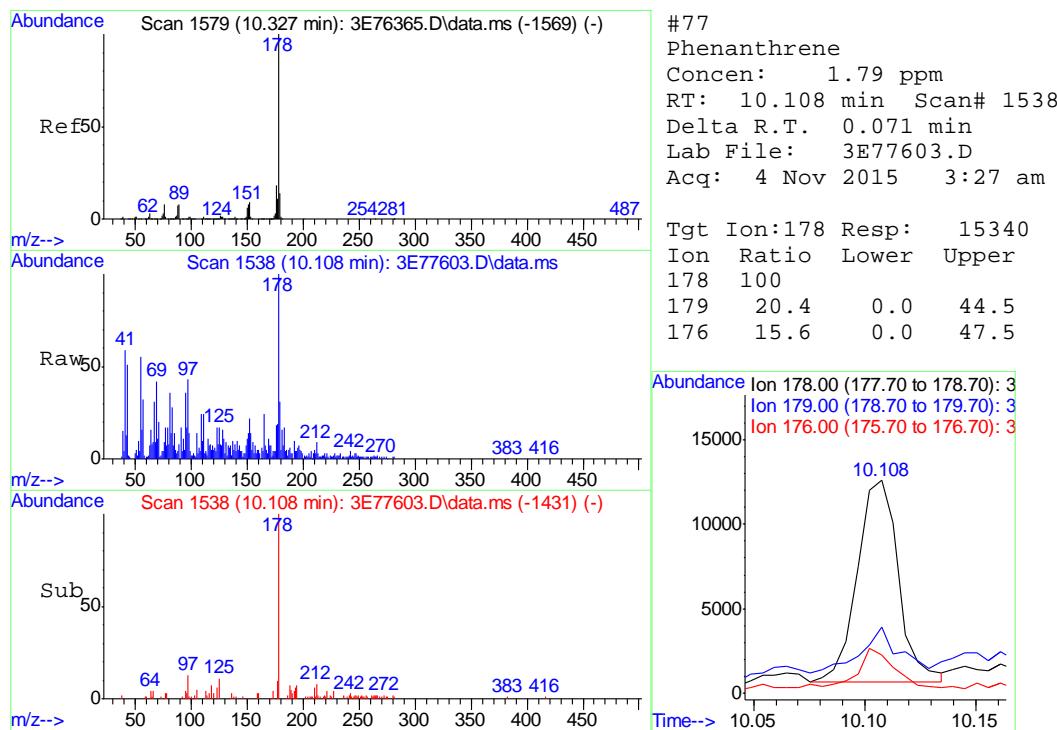
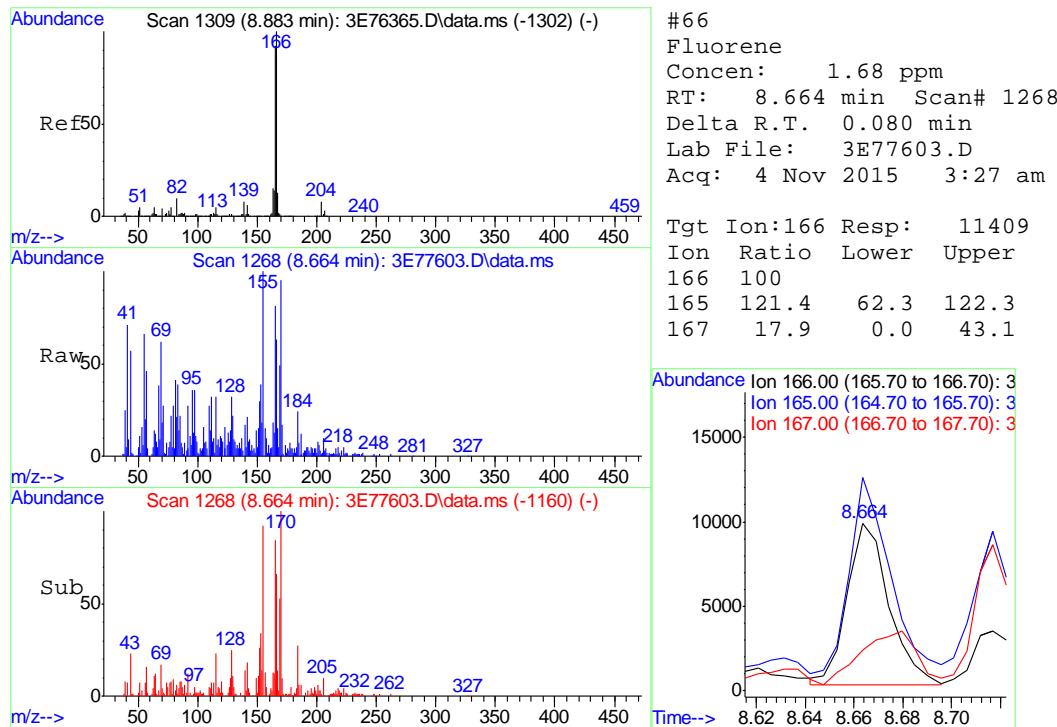
Quant Title : Semi Volatile GC/MS, zB-5MSI 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

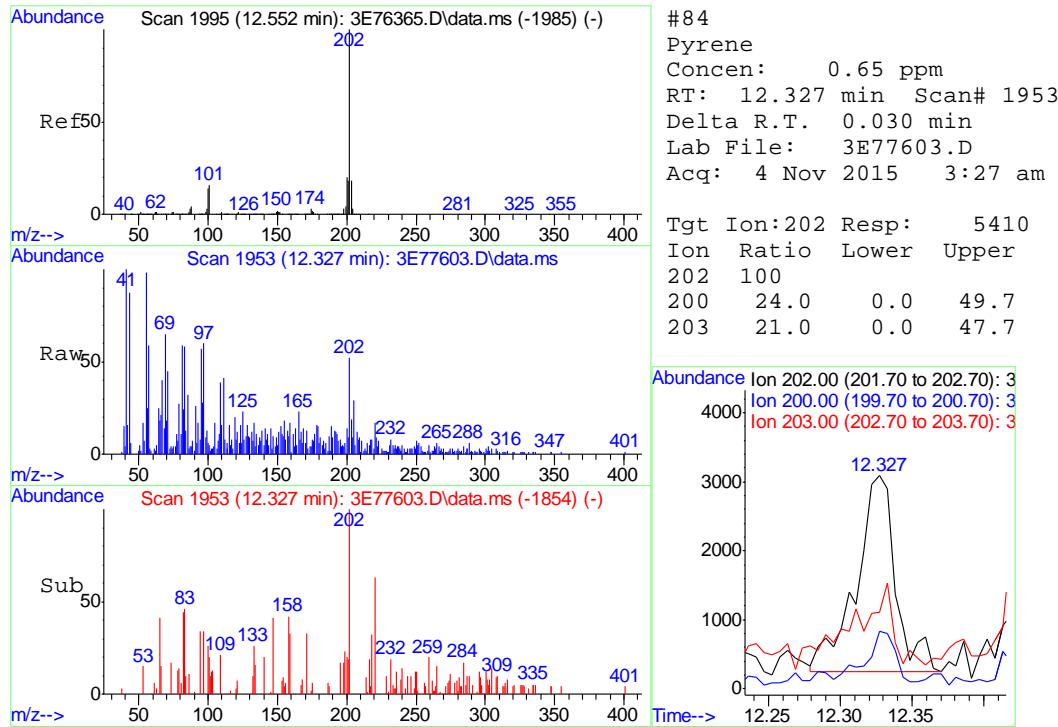
QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration







9.1.3  
9

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77610.D  
 Acq On : 4 Nov 2015 6:27 am  
 Operator : sarad  
 Sample : jc7097-3  
 Misc : op88470,e3e3377,17.1  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 06 15:14:43 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration

9.1.4

9

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.716	152	79518	40.00	ppm	0.05
24) Naphthalene-d8	5.813	136	308328	40.00	ppm	0.06
47) Acenaphthene-d10	7.893	164	170669	40.00	ppm	0.07
69) Phenanthrene-d10	10.075	188	254280	40.00	ppm	0.07
83) Chrysene-d12	14.280	240	206889	40.00	ppm	0.08
92) Perylene-d12	16.408	264	203952	40.00	ppm	0.08
102) 1,4-Dichlorobenzene-d4a	4.716	152	79518	40.00	ppm	0.05
104) Acenaphthene-d10a	7.893	164	170669	40.00	ppm	0.07
106) Phenanthrene-d10a	10.075	188	254280	40.00	ppm	0.07
108) Chrysene-d12a	14.280	240	206889	40.00	ppm	0.08
110) Naphthalene-d8a	5.813	136	308328	40.00	ppm	0.06
112) Chrysene-d12b	14.280	240	206889	40.00	ppm	0.08
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.759	112	96398	37.86	ppm	0.05
Spiked Amount	50.000		Recovery	=	75.72%	
8) Phenol-d5	4.475	99	119007	38.57	ppm	0.03
Spiked Amount	50.000		Recovery	=	77.14%	
25) Nitrobenzene-d5	5.165	82	110354	47.32	ppm	0.07
Spiked Amount	50.000		Recovery	=	94.64%	
51) 2-Fluorobiphenyl	7.011	172	231569	42.87	ppm	0.05
Spiked Amount	50.000		Recovery	=	85.74%	
73) 2,4,6-Tribromophenol	9.033	330	41094	49.54	ppm	0.06
Spiked Amount	50.000		Recovery	=	99.08%	
85) Terphenyl-d14	12.632	244	202613	44.80	ppm	0.04
Spiked Amount	50.000		Recovery	=	89.60%	
<hr/>						
Target Compounds						
44) 2-Methylnaphthalene	6.572	141	14568	3.12	ppm	96
59) Acenaphthene	7.936	153	4910	0.93	ppm	84
66) Fluorene	8.669	166	9785	1.69	ppm	75
77) Phenanthrene	10.108	178	22835	3.07	ppm	93
84) Pyrene	12.333	202	17023	2.57	ppm	91
88) Benzo[a]anthracene	14.269	228	3656	0.63	ppm	66
90) Chrysene	14.306	228	6509	1.19	ppm	63

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77610.D  
 Acq On : 4 Nov 2015 6:27 am  
 Operator : sarad  
 Sample : jc7097-3  
 Misc : op88470,e3e3377,17.1  
 ALS Vial : 18 Sample Multiplier: 1

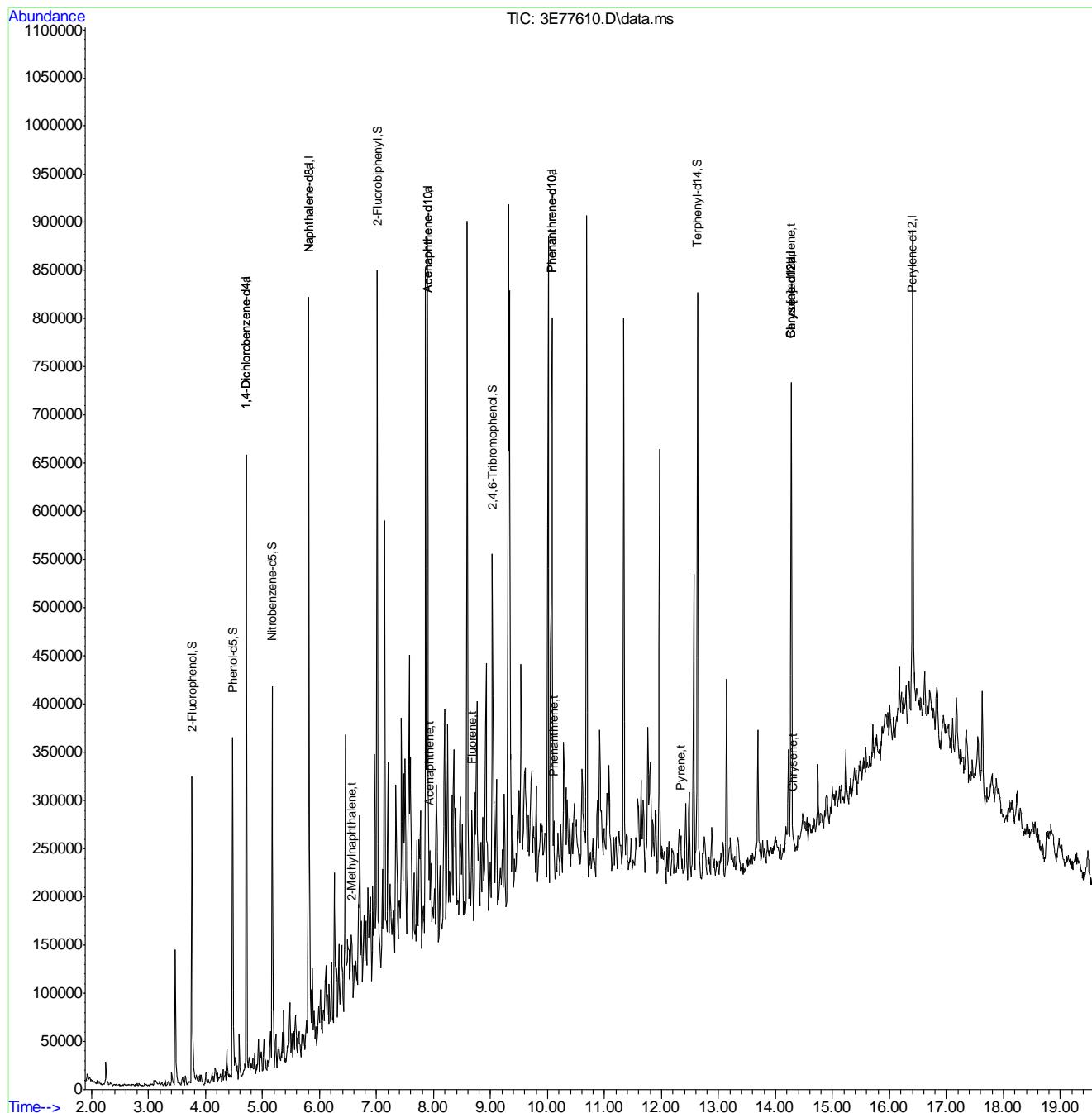
Quant Time: Nov 06 15:14:43 2015

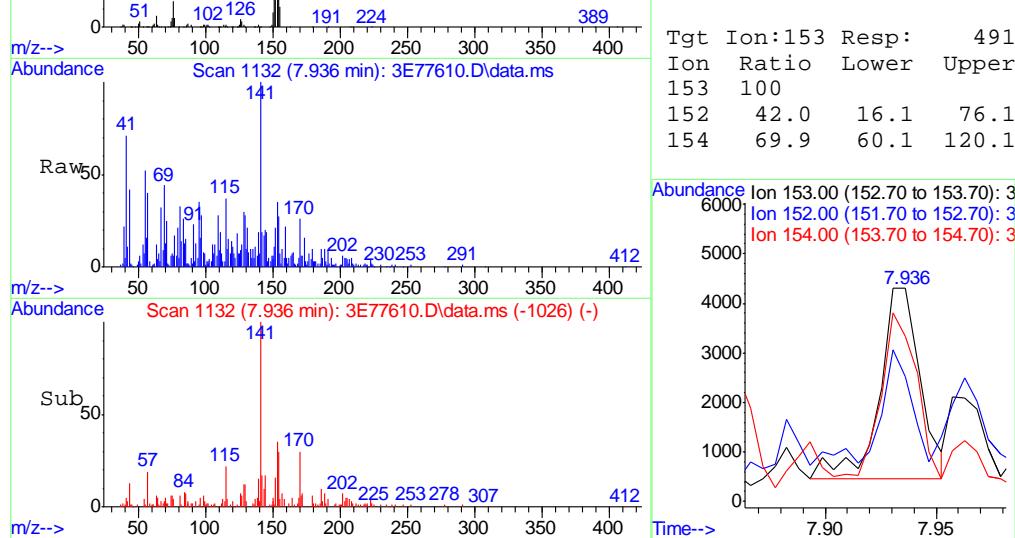
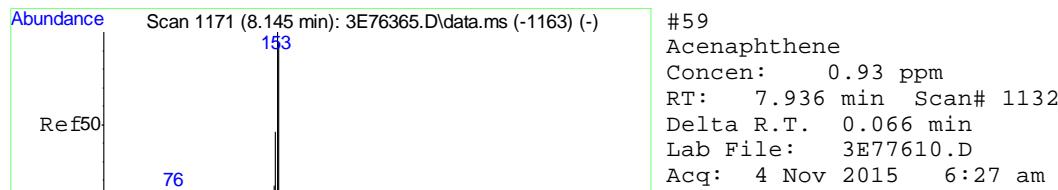
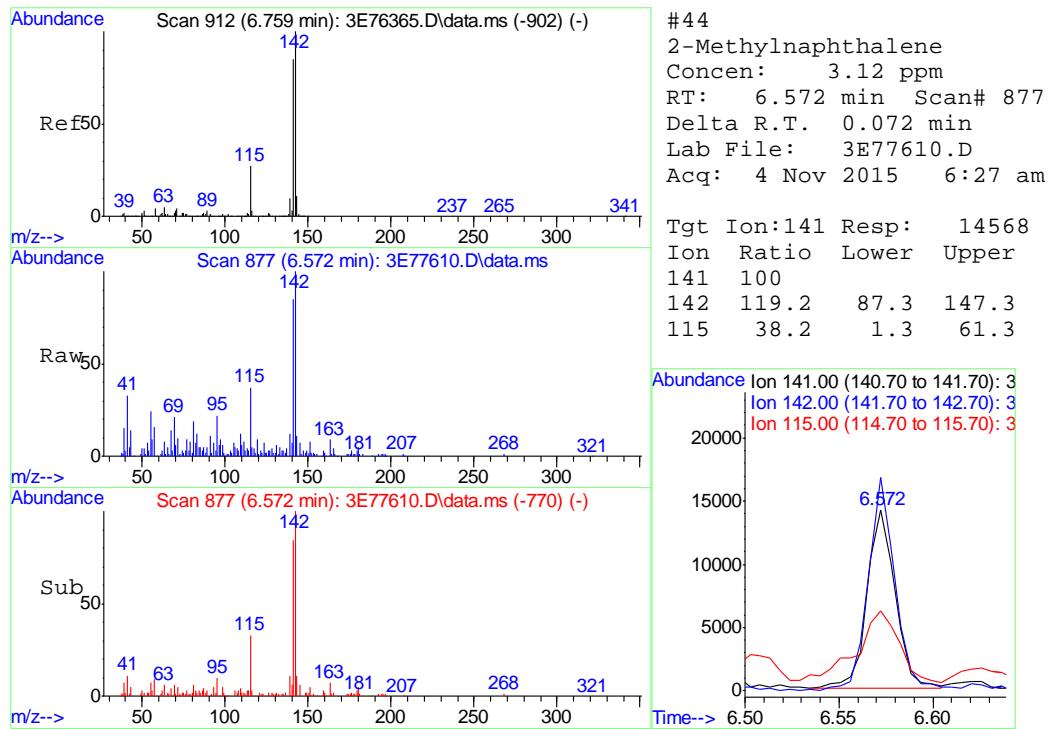
Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

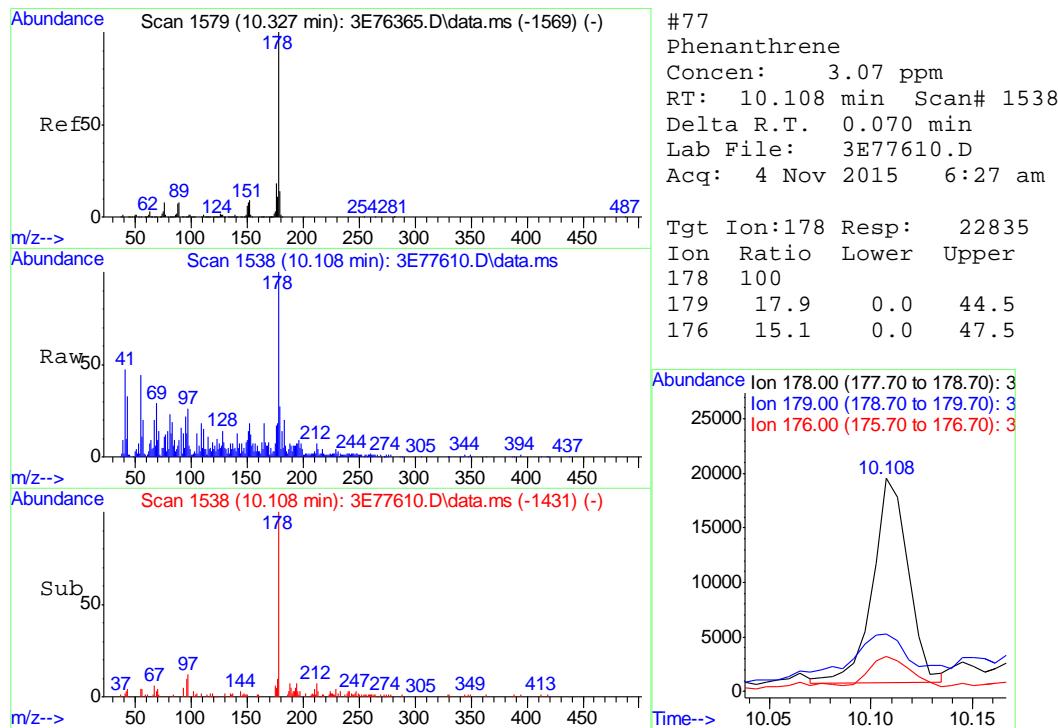
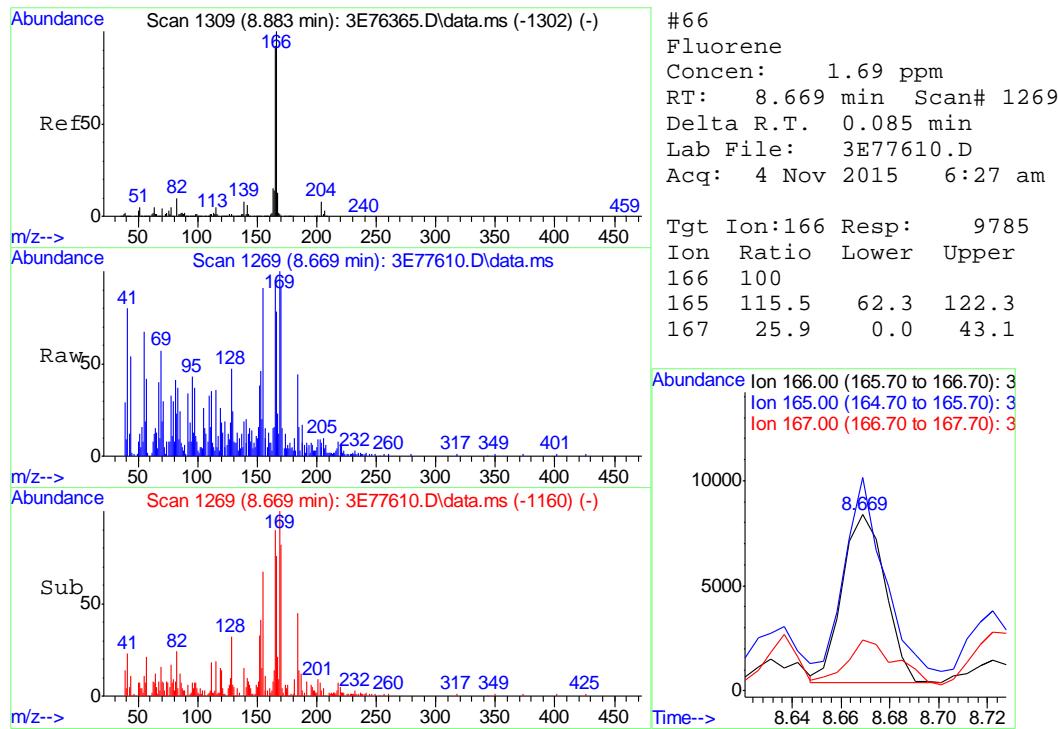
Quant Title : Semi Volatile GC/MS, zB-5MSI 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

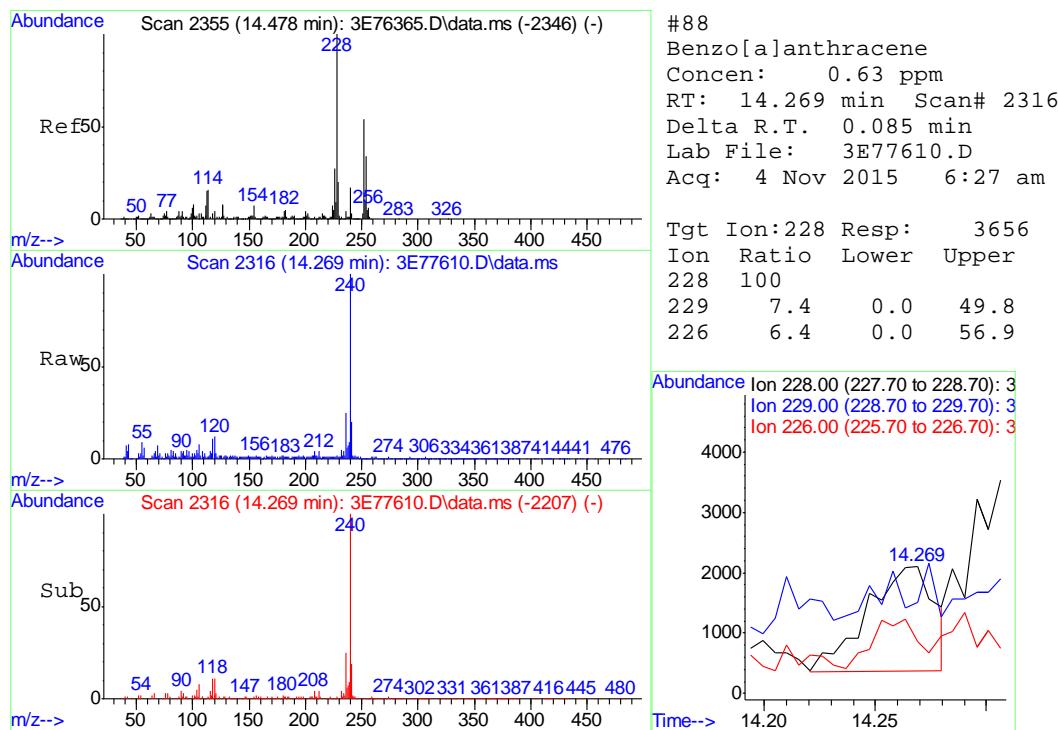
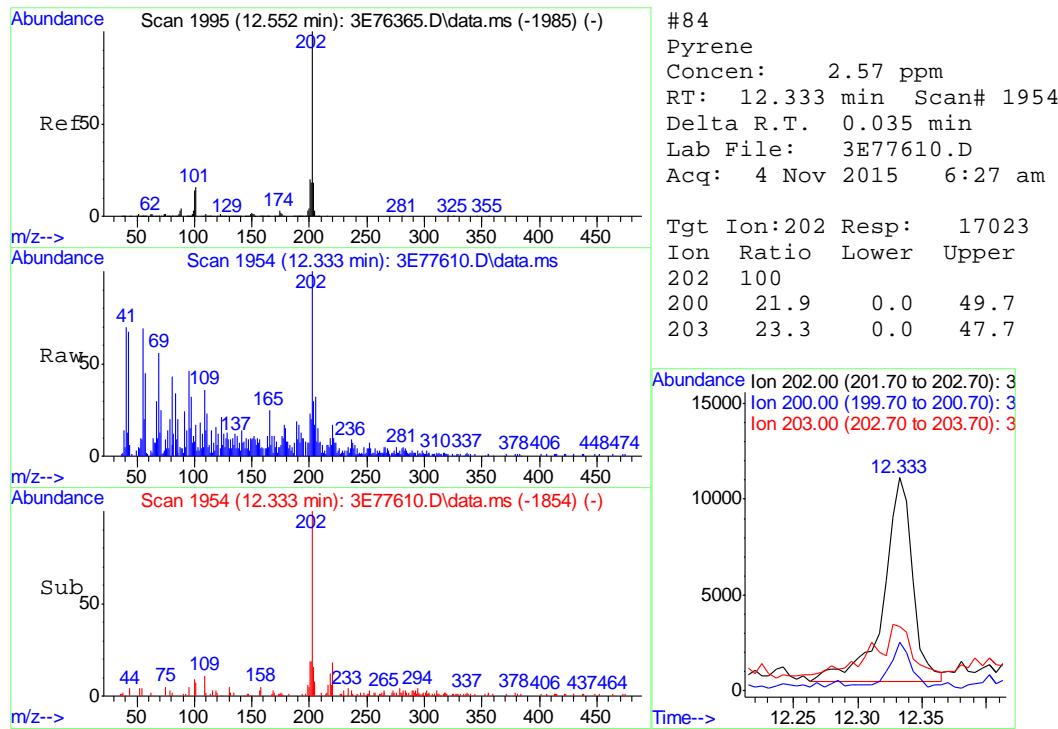
QLast Update : Mon Nov 02 23:01:31 2015

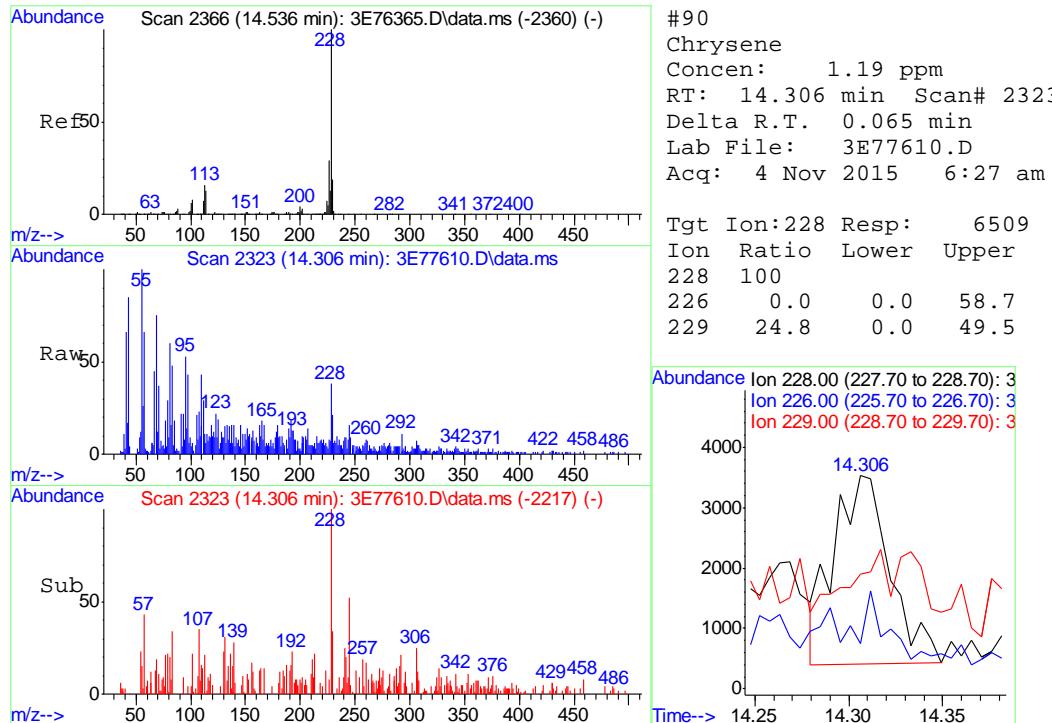
Response via : Initial Calibration









9.1.4  
9

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m3443\  
 Data File : 2m78950.D  
 Acq On : 5 Nov 2015 8:42 pm  
 Operator : ashleyn  
 Sample : jc7097-3  
 Misc : op88470,e2m3443,17.1,,,1,2  
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Nov 06 11:39:14 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M2M3440.M  
 Quant Title : Semi Volatile GC/MS,rx1 5sil ms 30m .25mm .25um  
 QLast Update : Wed Nov 04 22:59:01 2015  
 Response via : Initial Calibration

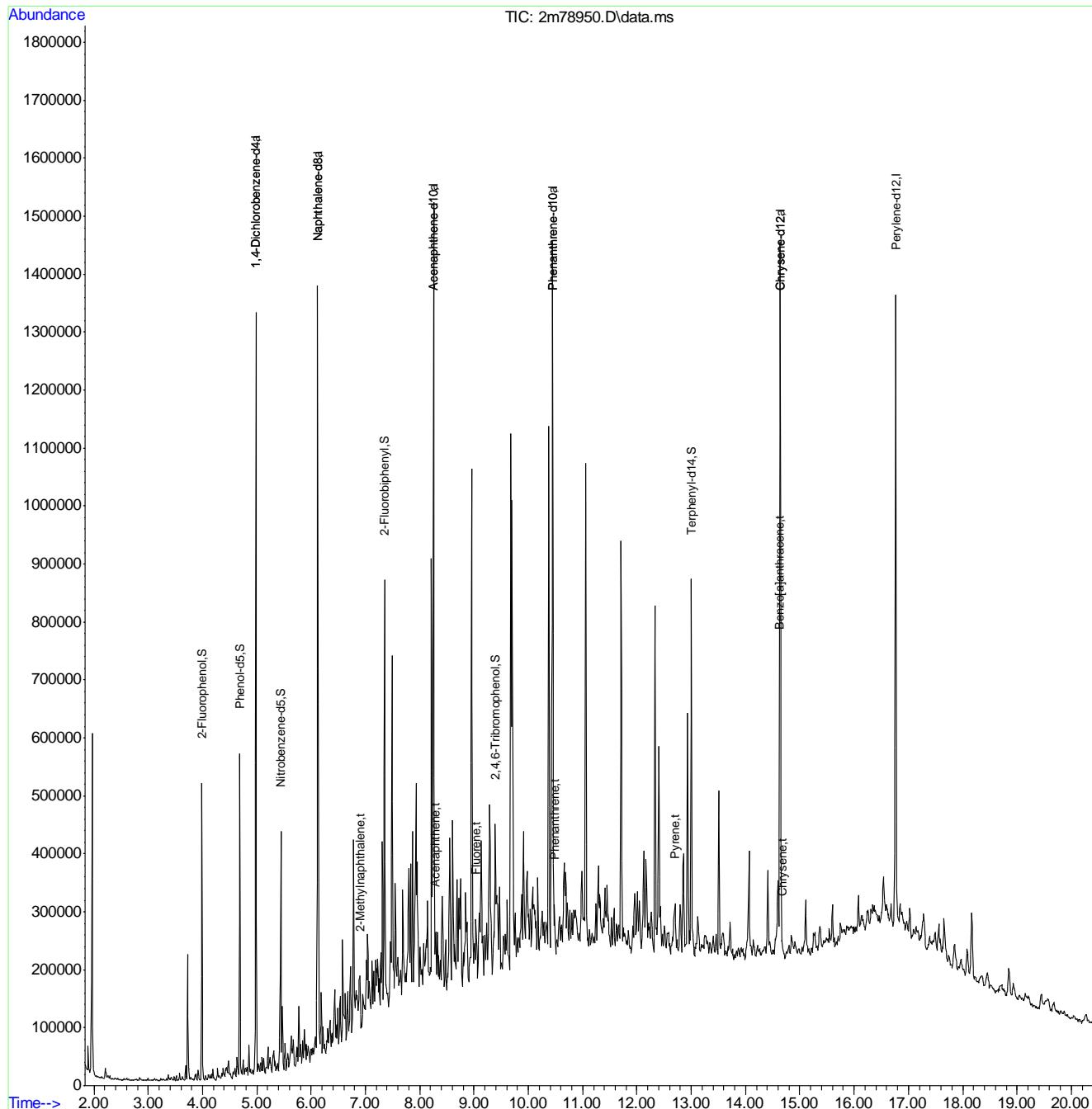
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.982	152	155009	40.00	ppm	0.00
24) Naphthalene-d8	6.126	136	566469	40.00	ppm	0.00
47) Acenaphthene-d10	8.255	164	309620	40.00	ppm	0.00
69) Phenanthrene-d10	10.448	188	533981	40.00	ppm	0.00
83) Chrysene-d12	14.636	240	565056	40.00	ppm	-0.01
92) Perylene-d12	16.765	264	537205	40.00	ppm	0.00
102) 1,4-Dichlorobenzene-d4a	4.982	152	155009	40.00	ppm	0.00
104) Acenaphthene-d10a	8.255	164	309620	40.00	ppm	0.00
106) Chrysene-d12a	14.636	240	565056	40.00	ppm	0.00
108) Phenanthrene-d10a	10.448	188	533981	40.00	ppm	0.00
110) Naphthalene-d8a	6.126	136	566469	40.00	ppm	0.00
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.987	112	122603	17.91	ppm	0.00
Spiked Amount 50.000			Recovery	= 35.82%		
8) Phenol-d5	4.688	99	172530	17.50	ppm	0.00
Spiked Amount 50.000			Recovery	= 35.00%		
25) Nitrobenzene-d5	5.442	82	151887	17.35	ppm	0.00
Spiked Amount 50.000			Recovery	= 34.70%		
51) 2-Fluorobiphenyl	7.351	172	219127	18.82	ppm	-0.01
Spiked Amount 50.000			Recovery	= 37.64%		
73) 2,4,6-Tribromophenol	9.394	330	29781	20.73	ppm	0.00
Spiked Amount 50.000			Recovery	= 41.46%		
85) Terphenyl-d14	12.999	244	249709	19.23	ppm	0.00
Spiked Amount 50.000			Recovery	= 38.46%		
<hr/>						
Target Compounds						
44) 2-Methylnaphthalene	6.907	141	12674	1.41	ppm	97
59) Acenaphthene	8.298	153	4606	0.43	ppm	91
66) Fluorene	9.036	166	9812	0.78	ppm	85
77) Phenanthrene	10.485	178	23879	1.40	ppm	95
84) Pyrene	12.700	202	20442	0.99	ppm	86
88) Benzo[a]anthracene	14.620	228	7929	0.40	ppm	91
90) Chrysene	14.673	228	11314	0.59	ppm	93
<hr/>						

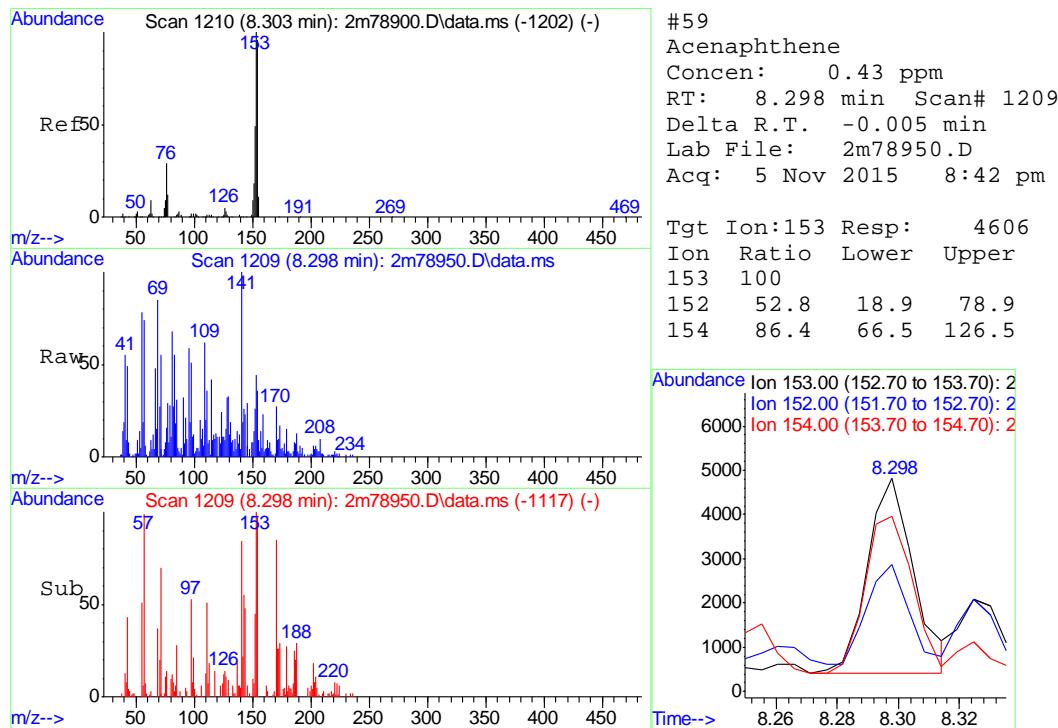
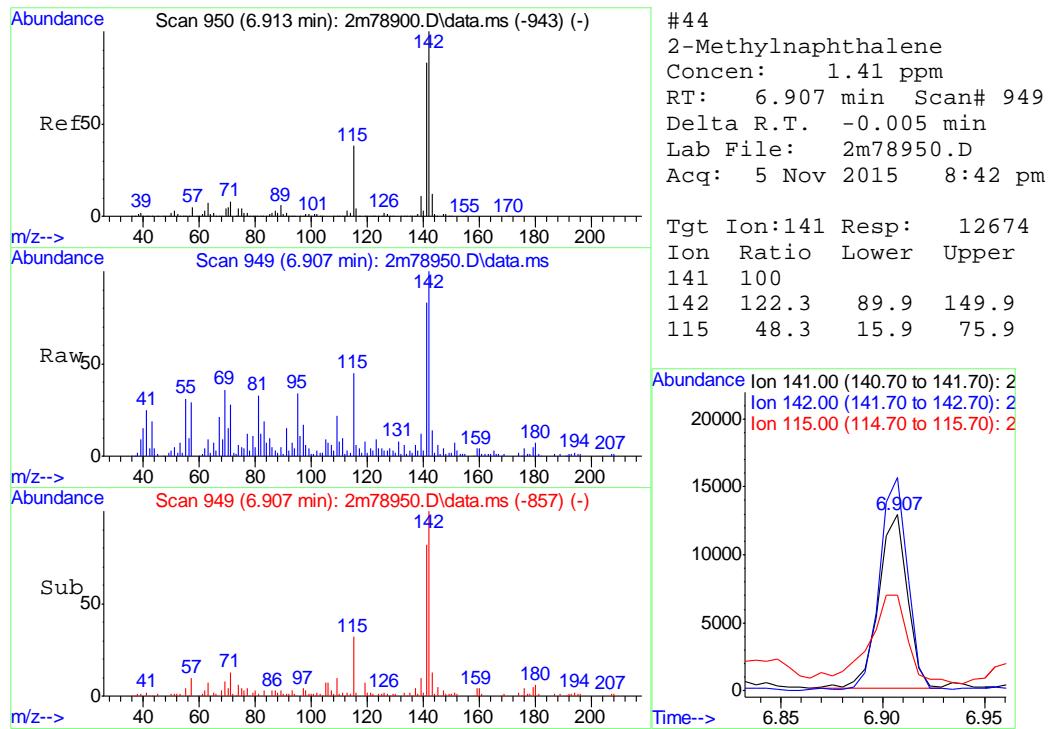
(#) = qualifier out of range (m) = manual integration (+) = signals summed

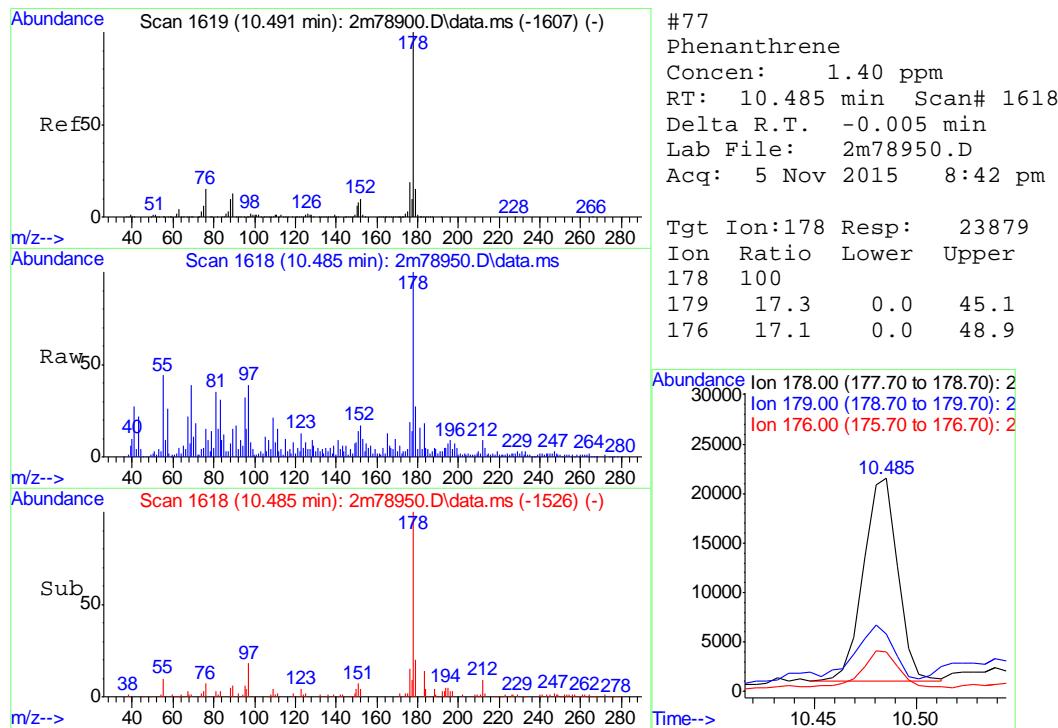
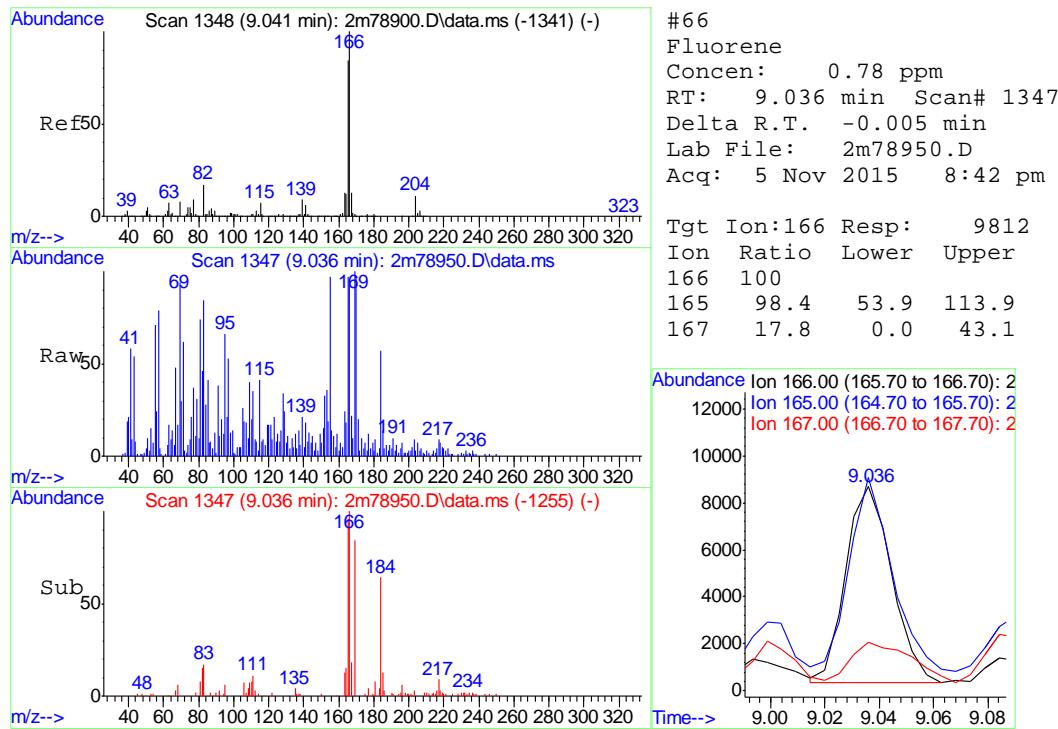
## Quantitation Report (QT Reviewed)

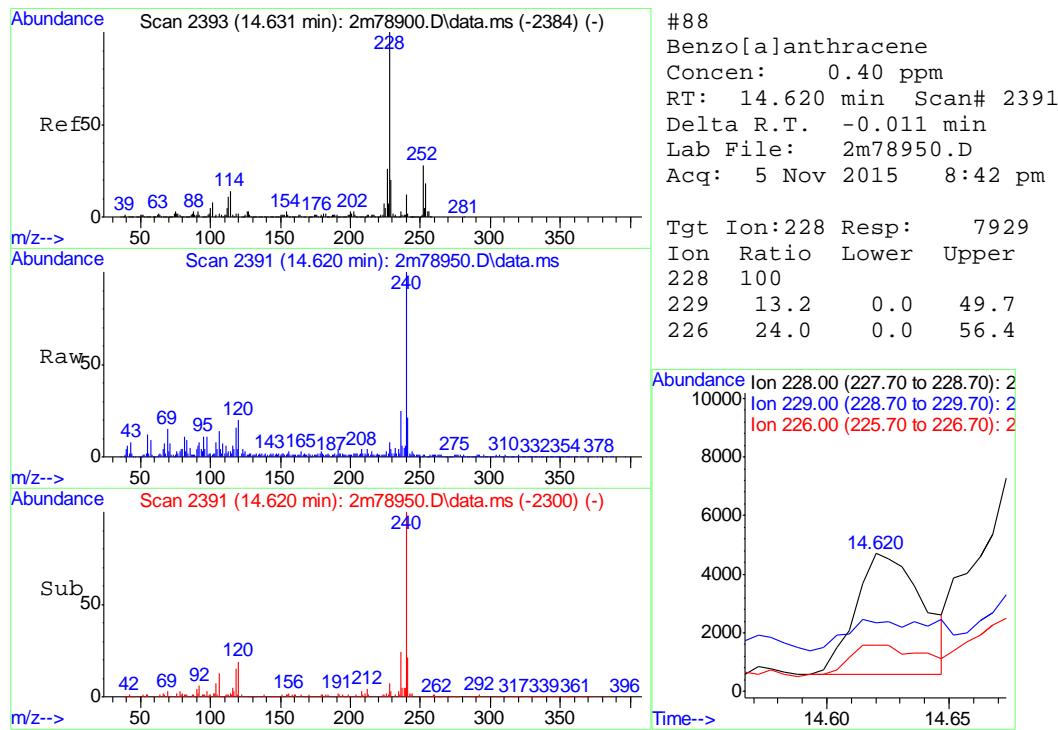
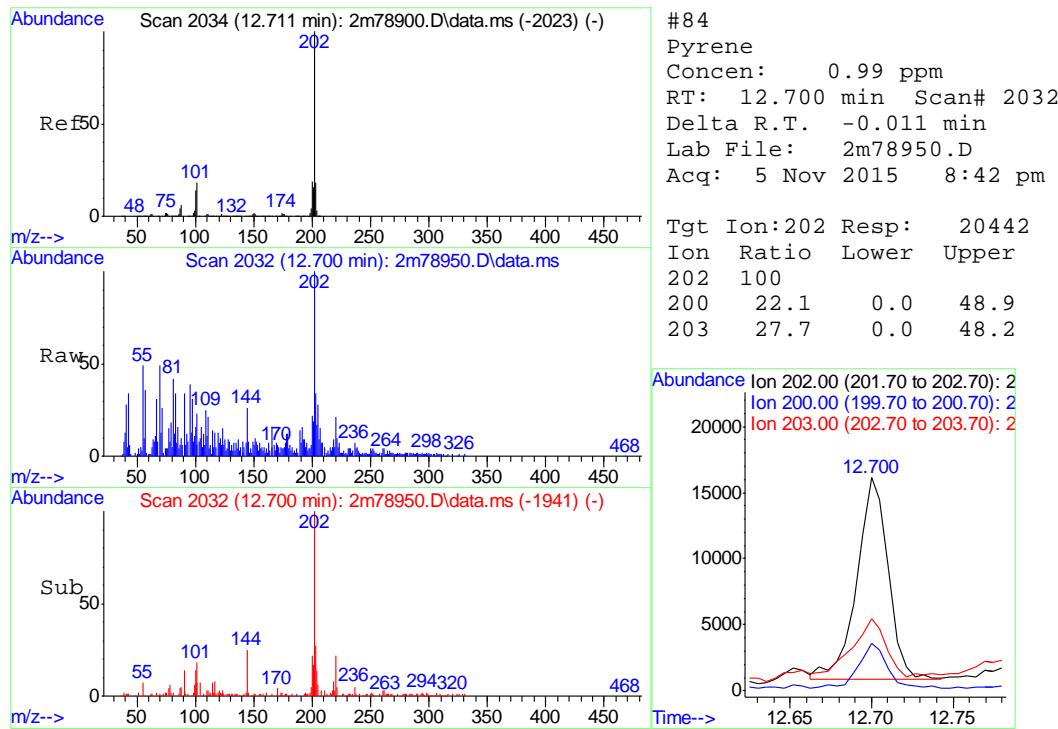
Data Path : C:\msdchem\1\DATA\e2m3443\  
 Data File : 2m78950.D  
 Acq On : 5 Nov 2015 8:42 pm  
 Operator : ashley  
 Sample : jc7097-3  
 Misc : op88470,e2m3443,17.1,,,1,2  
 ALS Vial : 24 Sample Multiplier: 1

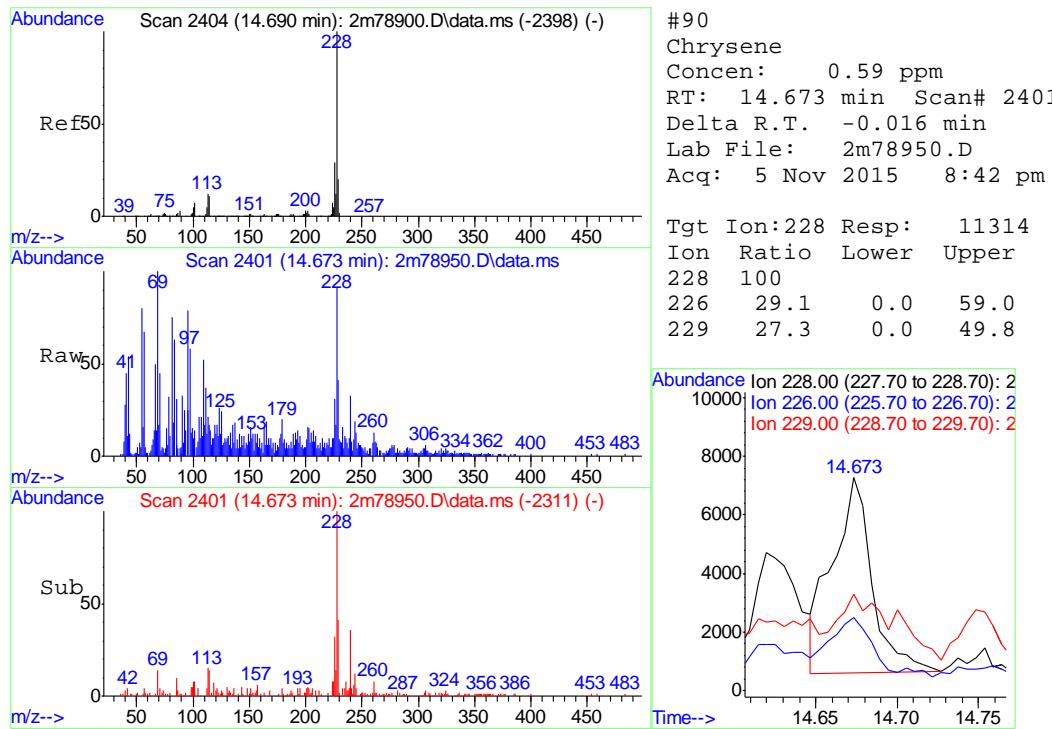
Quant Time: Nov 06 11:39:14 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M2M3440.M  
 Quant Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 QLast Update : Wed Nov 04 22:59:01 2015  
 Response via : Initial Calibration











## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77604.D  
 Acq On : 4 Nov 2015 3:52 am  
 Operator : sarad  
 Sample : jc7097-4  
 Misc : op88470,e3e3377,30.2  
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 04 11:05:08 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration

9.16

6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.716	152	90682	40.00	ppm	0.05
24) Naphthalene-d8	5.813	136	342768	40.00	ppm	0.06
47) Acenaphthene-d10	7.888	164	205294	40.00	ppm	0.06
69) Phenanthrene-d10	10.070	188	330388	40.00	ppm	0.07
83) Chrysene-d12	14.269	240	326390	40.00	ppm	0.07
92) Perylene-d12	16.397	264	296912	40.00	ppm	0.07
102) 1,4-Dichlorobenzene-d4a	4.716	152	90682	40.00	ppm	0.05
104) Acenaphthene-d10a	7.888	164	205294	40.00	ppm	0.06
106) Phenanthrene-d10a	10.070	188	330388	40.00	ppm	0.07
108) Chrysene-d12a	14.269	240	326390	40.00	ppm	0.07
110) Naphthalene-d8a	5.813	136	342768	40.00	ppm	0.06
112) Chrysene-d12b	14.269	240	326390	40.00	ppm	0.07

## System Monitoring Compounds

5) 2-Fluorophenol	3.759	112	107828	37.13	ppm	0.05
Spiked Amount	50.000			Recovery	=	74.26%
8) Phenol-d5	4.470	99	127290	36.17	ppm	0.02
Spiked Amount	50.000			Recovery	=	72.34%
25) Nitrobenzene-d5	5.165	82	116823	45.06	ppm	0.07
Spiked Amount	50.000			Recovery	=	90.12%
51) 2-Fluorobiphenyl	7.005	172	248645	38.27	ppm	0.04
Spiked Amount	50.000			Recovery	=	76.54%
73) 2,4,6-Tribromophenol	9.027	330	45793	42.49	ppm	0.05
Spiked Amount	50.000			Recovery	=	84.98%
85) Terphenyl-d14	12.621	244	286203	40.11	ppm	0.03
Spiked Amount	50.000			Recovery	=	80.22%

## Target Compounds

Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77604.D  
 Acq On : 4 Nov 2015 3:52 am  
 Operator : sarad  
 Sample : jc7097-4  
 Misc : op88470,e3e3377,30.2  
 ALS Vial : 12 Sample Multiplier: 1

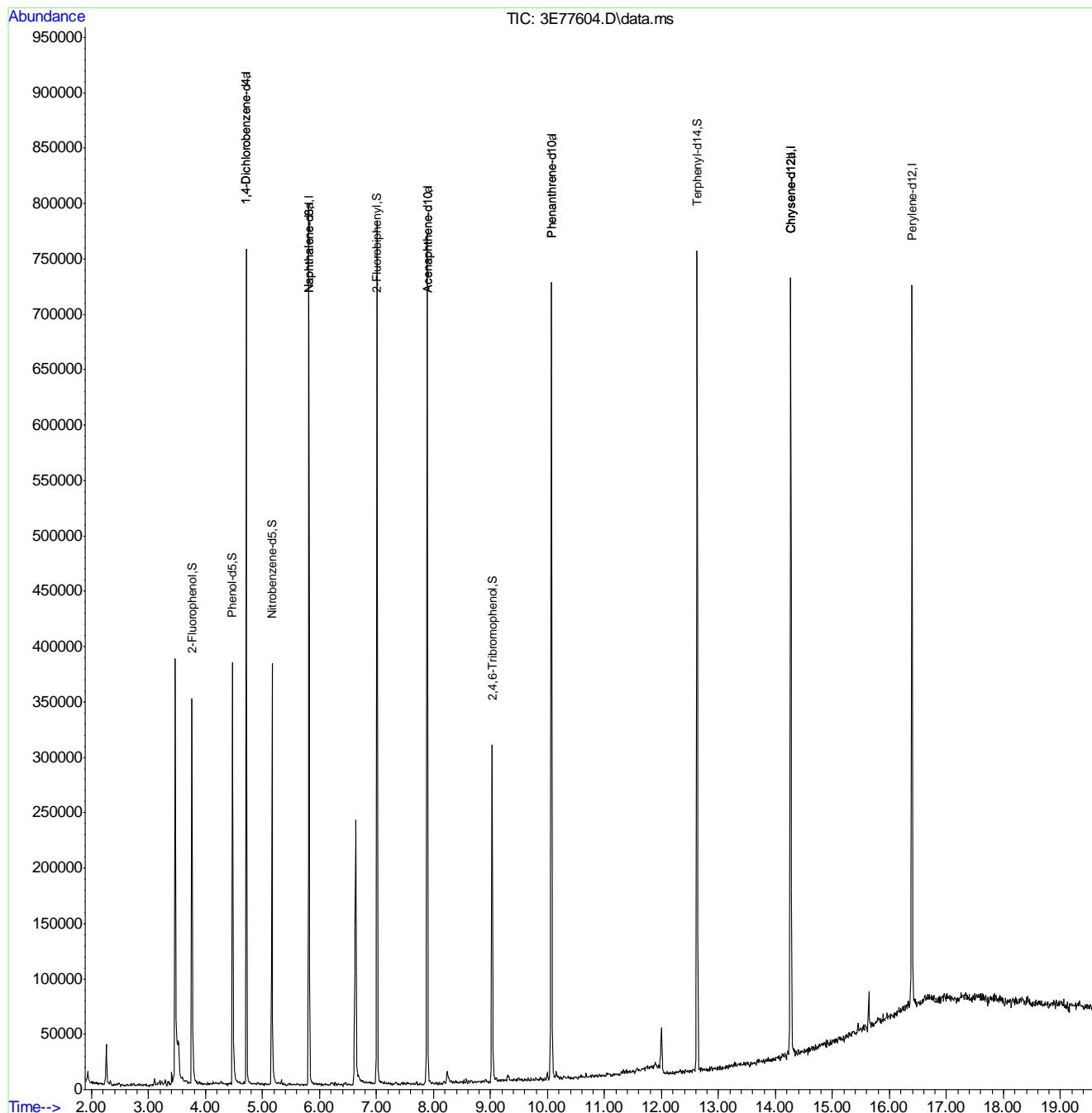
Quant Time: Nov 04 11:05:08 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zB-5MSI 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77605.D  
 Acq On : 4 Nov 2015 4:18 am  
 Operator : sarad  
 Sample : jc7097-5  
 Misc : op88470,e3e3377,11.1  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 04 11:08:09 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration

9.17

6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.716	152	85516	40.00	ppm	0.05
24) Naphthalene-d8	5.813	136	321591	40.00	ppm	0.06
47) Acenaphthene-d10	7.888	164	185876	40.00	ppm	0.06
69) Phenanthrene-d10	10.076	188	257852	40.00	ppm	0.07
83) Chrysene-d12	14.269	240	231756	40.00	ppm	0.07
92) Perylene-d12	16.398	264	232598	40.00	ppm	0.07
102) 1,4-Dichlorobenzene-d4a	4.716	152	85516	40.00	ppm	0.05
104) Acenaphthene-d10a	7.888	164	185876	40.00	ppm	0.06
106) Phenanthrene-d10a	10.076	188	257852	40.00	ppm	0.07
108) Chrysene-d12a	14.269	240	231756	40.00	ppm	0.07
110) Naphthalene-d8a	5.813	136	321591	40.00	ppm	0.06
112) Chrysene-d12b	14.269	240	231756	40.00	ppm	0.07
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.759	112	97085	35.45	ppm	0.05
Spiked Amount	50.000		Recovery	=	70.90%	
8) Phenol-d5	4.470	99	116606	35.14	ppm	0.02
Spiked Amount	50.000		Recovery	=	70.28%	
25) Nitrobenzene-d5	5.166	82	107492	44.20	ppm	0.07
Spiked Amount	50.000		Recovery	=	88.40%	
51) 2-Fluorobiphenyl	7.011	172	218679	37.17	ppm	0.05
Spiked Amount	50.000		Recovery	=	74.34%	
73) 2,4,6-Tribromophenol	9.033	330	37540	44.63	ppm	0.06
Spiked Amount	50.000		Recovery	=	89.26%	
85) Terphenyl-d14	12.627	244	201646	39.80	ppm	0.04
Spiked Amount	50.000		Recovery	=	79.60%	
<hr/>						
Target Compounds						
38) Naphthalene	5.834	128	33638	3.86	ppm	92
44) 2-Methylnaphthalene	6.572	141	118545	24.32	ppm	93
53) Biphenyl	7.134	154	48657	6.59	ppm	99
66) Fluorene	8.669	166	36368	5.77	ppm	97
77) Phenanthrene	10.108	178	148934	19.73	ppm	98
78) Anthracene	10.188	178	30560	3.97	ppm	70
81) Fluoranthene	11.980	202	8641	1.20	ppm	91
84) Pyrene	12.327	202	55520	7.47	ppm	96
88) Benzo[a]anthracene	14.258	228	4197	0.65	ppm	83
90) Chrysene	14.312	228	5010	0.82	ppm	57
96) Benzo[a]pyrene	16.248	252	2420	0.40	ppm	76
<hr/>						

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3377\  
 Data File : 3E77605.D  
 Acq On : 4 Nov 2015 4:18 am  
 Operator : sarad  
 Sample : jc7097-5  
 Misc : op88470,e3e3377,11.1  
 ALS Vial : 13 Sample Multiplier: 1

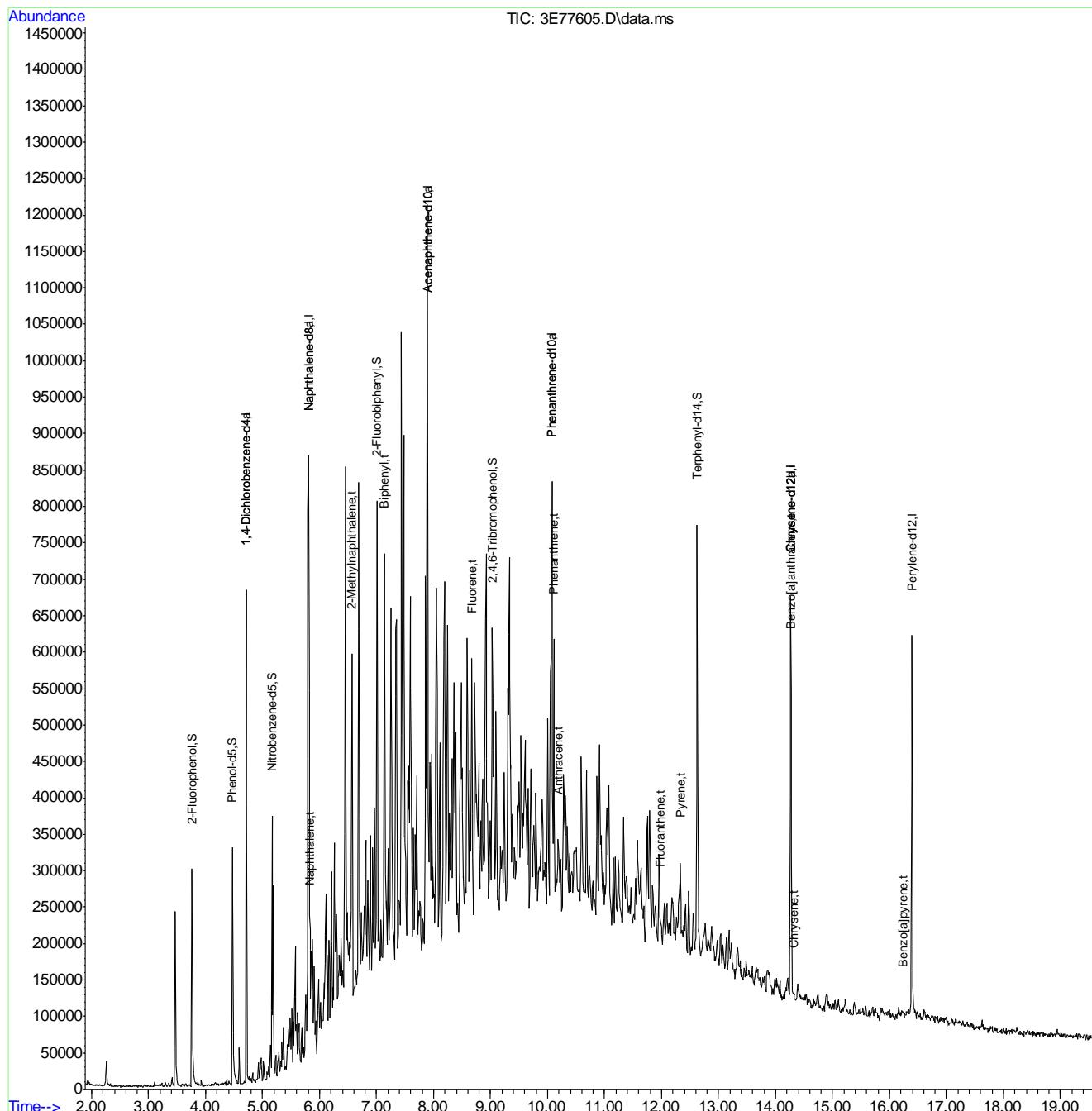
Quant Time: Nov 04 11:08:09 2015

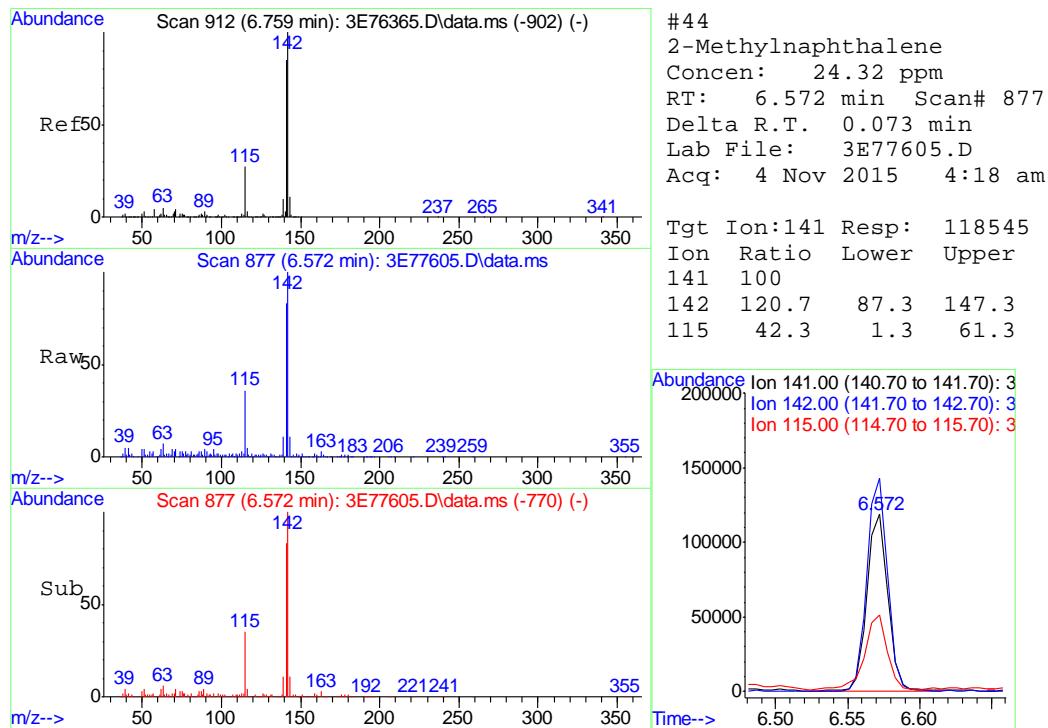
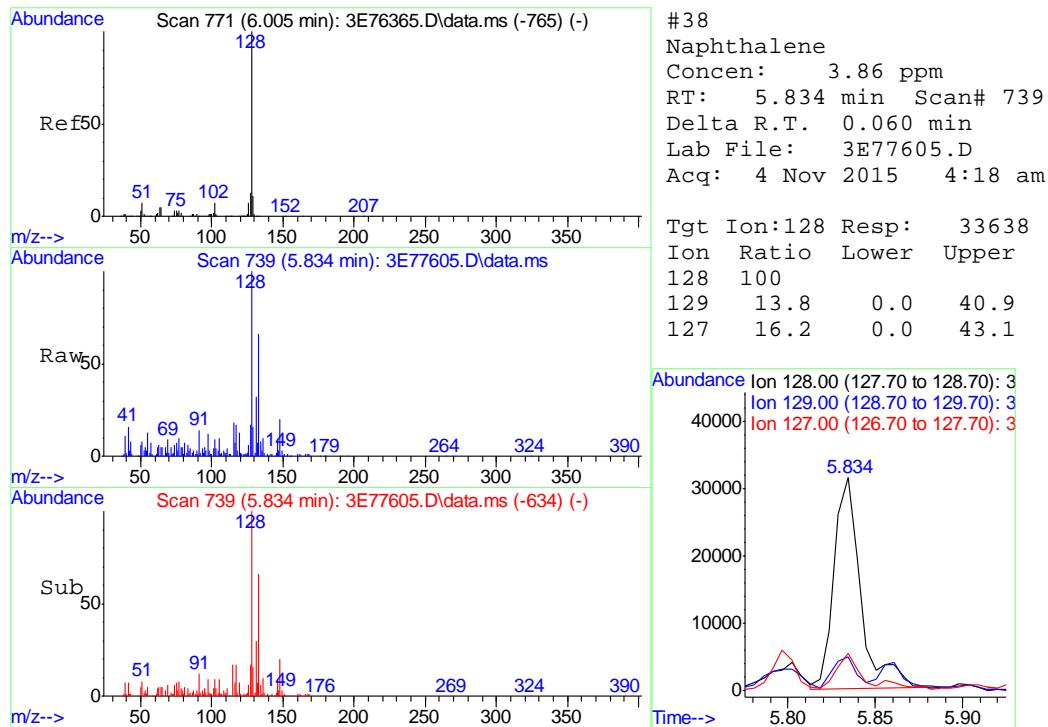
Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

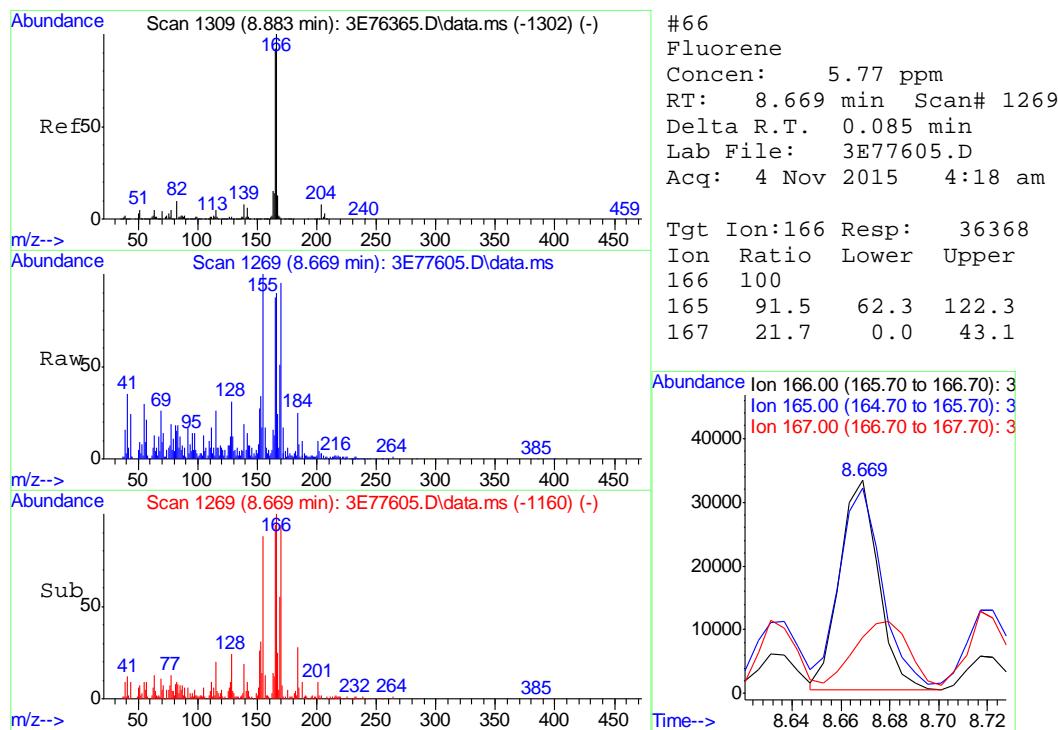
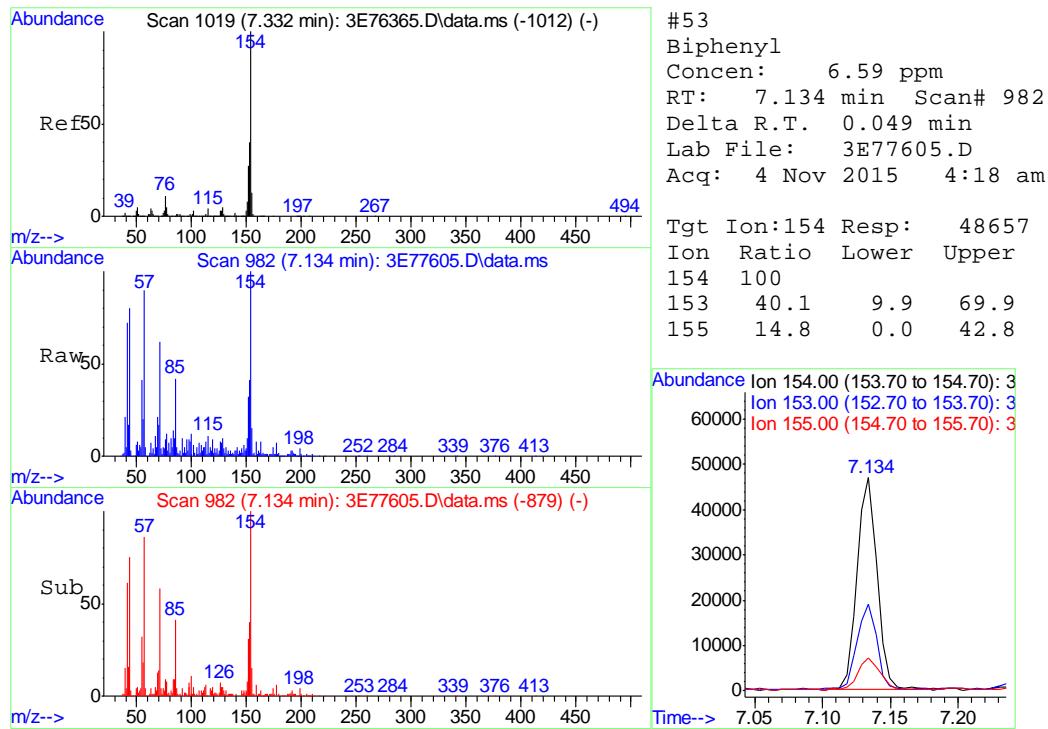
Quant Title : Semi Volatile GC/MS, zB-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

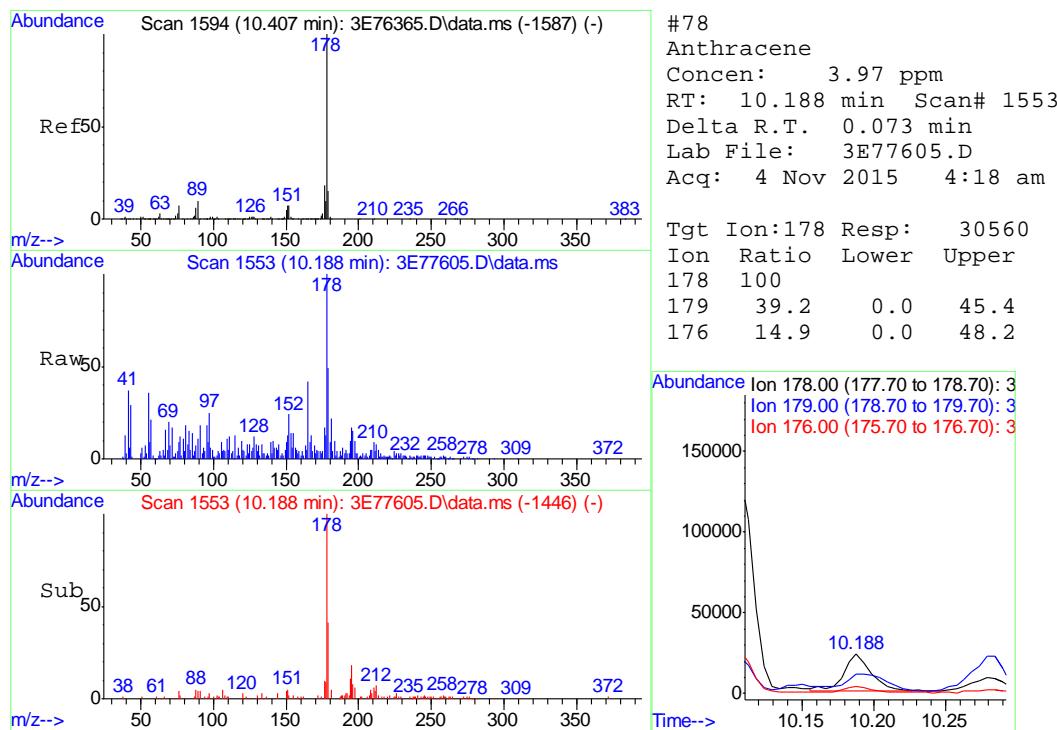
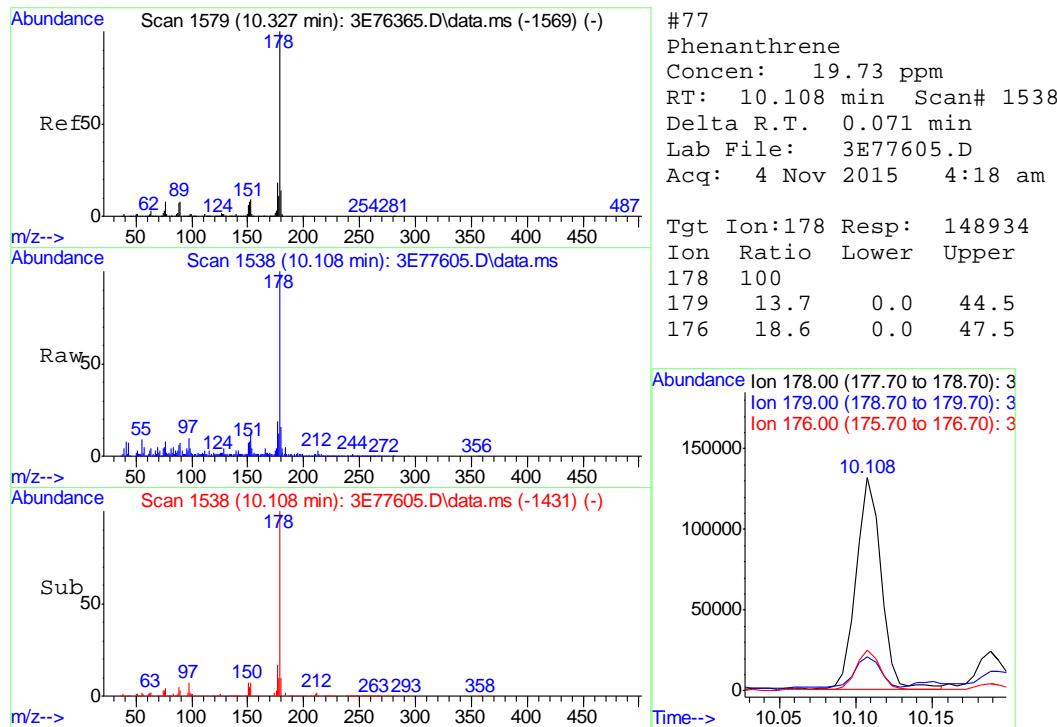
QLast Update : Mon Nov 02 23:01:31 2015

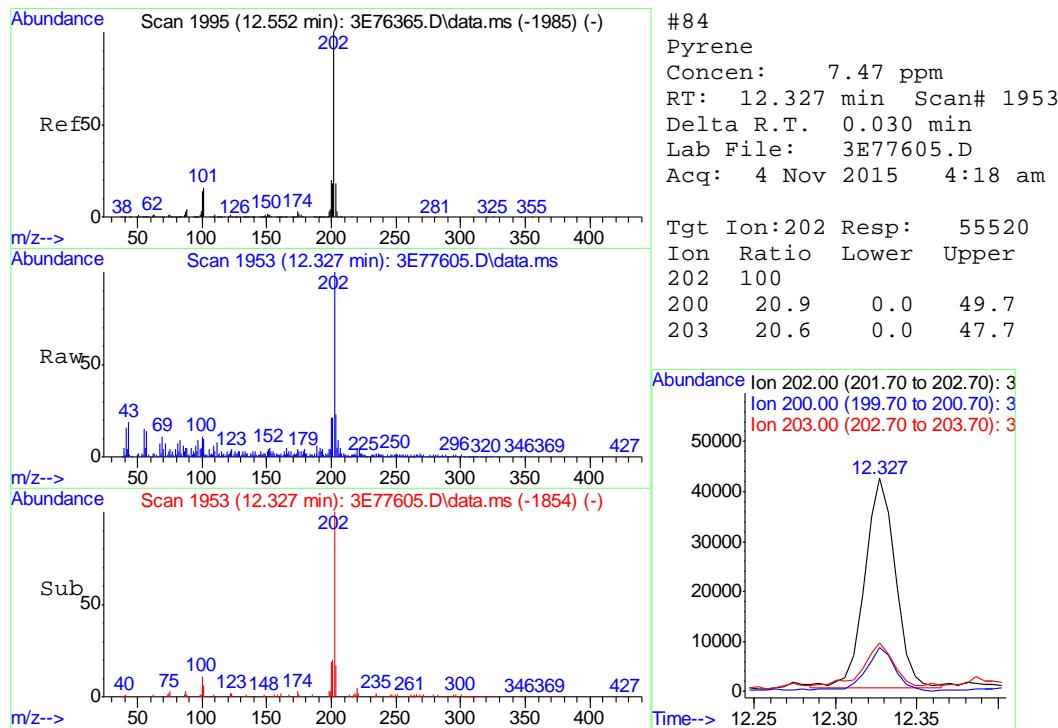
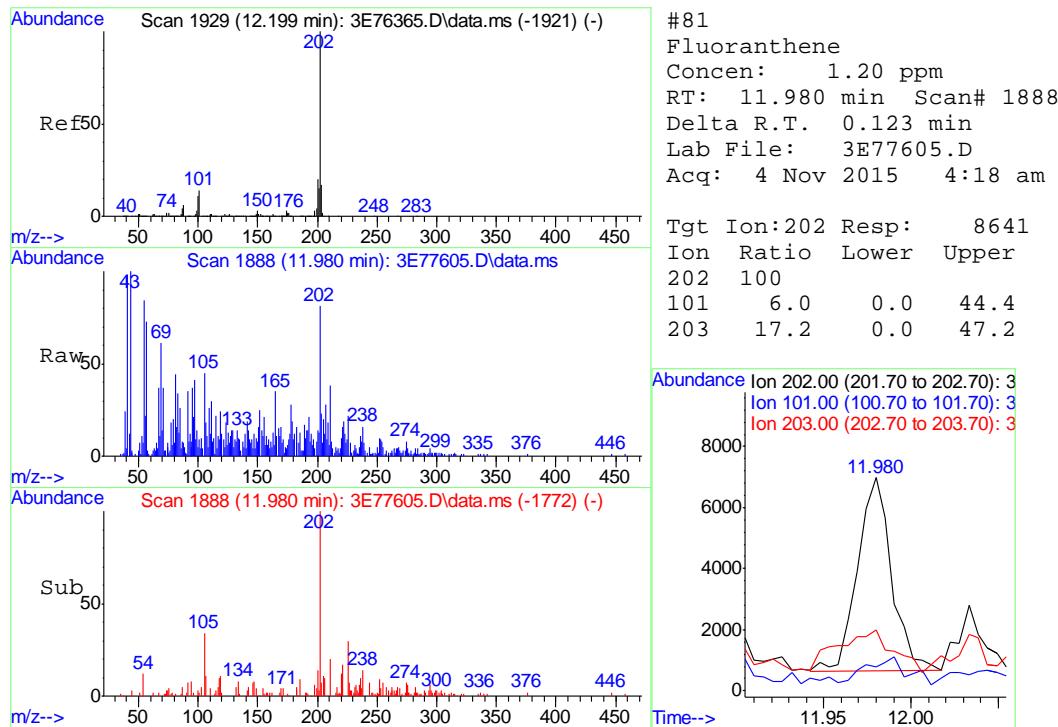
Response via : Initial Calibration

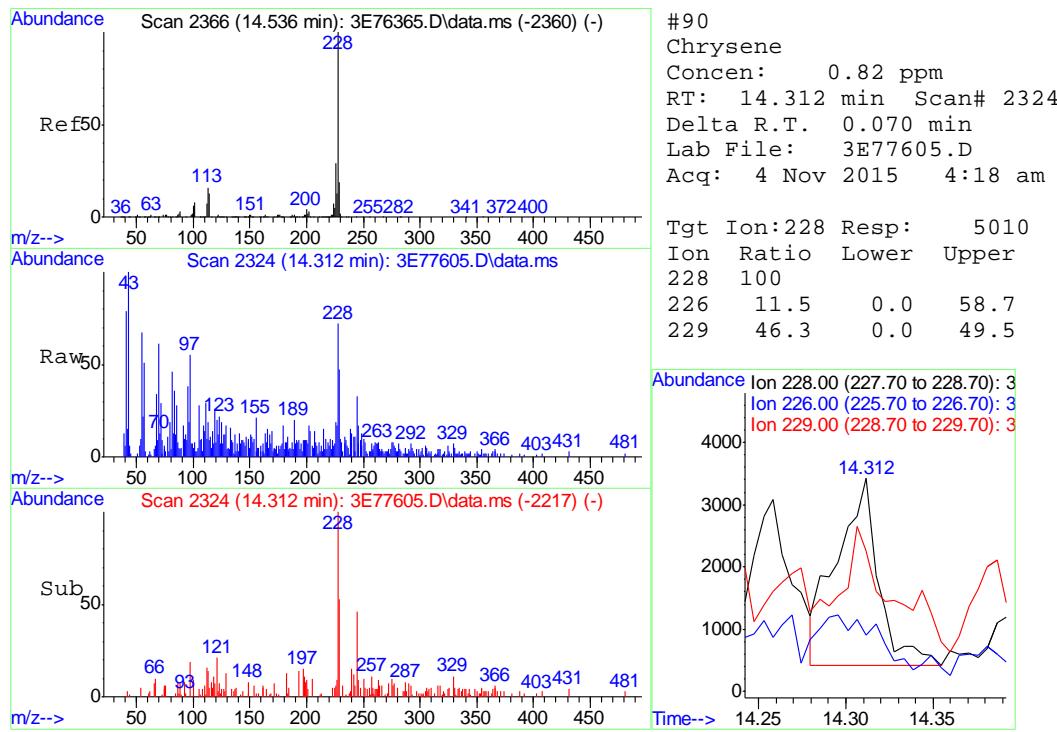
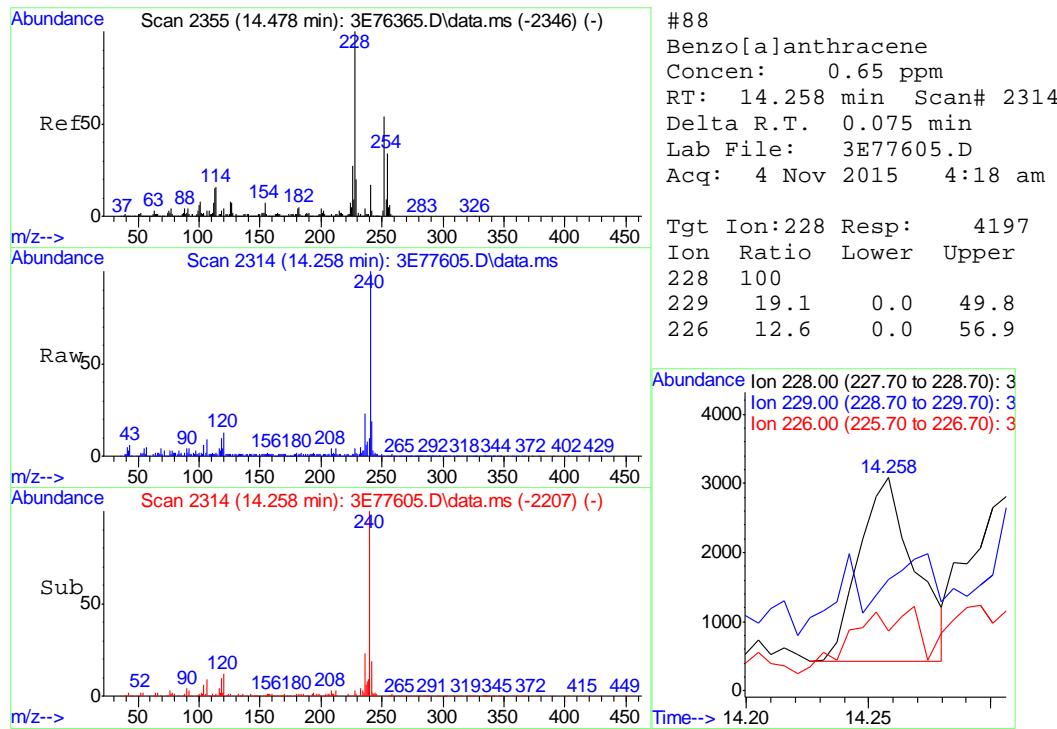


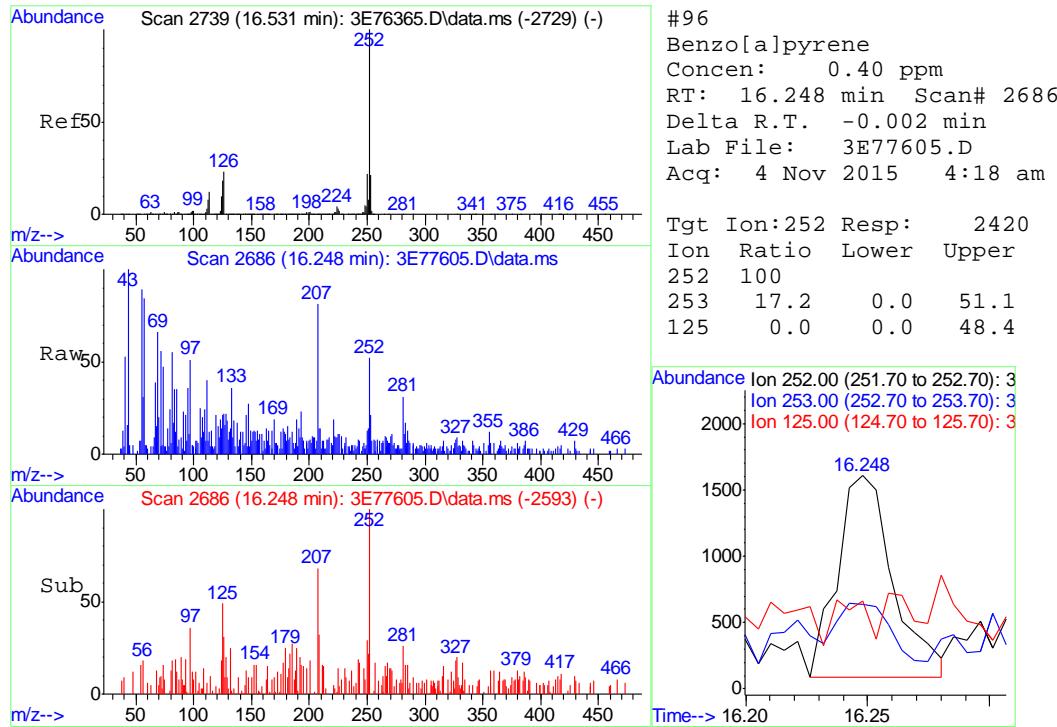












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m3443\  
 Data File : 2m78948.D  
 Acq On : 5 Nov 2015 7:47 pm  
 Operator : ashley  
 Sample : op88470-mb1  
 Misc : op88470,e2m3443,30.0  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Nov 06 11:28:04 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M2M3440.M  
 Quant Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 QLast Update : Wed Nov 04 22:59:01 2015  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.982	152	172667	40.00	ppm	0.00
24) Naphthalene-d8	6.121	136	607041	40.00	ppm	-0.01
47) Acenaphthene-d10	8.255	164	329088	40.00	ppm	0.00
69) Phenanthrene-d10	10.448	188	549585	40.00	ppm	0.00
83) Chrysene-d12	14.636	240	518600	40.00	ppm	-0.01
92) Perylene-d12	16.759	264	459675	40.00	ppm	-0.01
102) 1,4-Dichlorobenzene-d4a	4.982	152	172667	40.00	ppm	0.00
104) Acenaphthene-d10a	8.255	164	329088	40.00	ppm	0.00
106) Chrysene-d12a	14.636	240	518600	40.00	ppm	0.00
108) Phenanthrene-d10a	10.448	188	549585	40.00	ppm	0.00
110) Naphthalene-d8a	6.121	136	607041	40.00	ppm	0.00
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.992	112	312565	41.00	ppm	0.00
Spiked Amount 50.000			Recovery =	82.00%		
8) Phenol-d5	4.688	99	434401	39.57	ppm	0.00
Spiked Amount 50.000			Recovery =	79.14%		
25) Nitrobenzene-d5	5.442	82	391409	41.72	ppm	0.00
Spiked Amount 50.000			Recovery =	83.44%		
51) 2-Fluorobiphenyl	7.357	172	529534	42.80	ppm	0.00
Spiked Amount 50.000			Recovery =	85.60%		
73) 2,4,6-Tribromophenol	9.389	330	66480	44.97	ppm	-0.01
Spiked Amount 50.000			Recovery =	89.94%		
85) Terphenyl-d14	12.999	244	519585	43.59	ppm	0.00
Spiked Amount 50.000			Recovery =	87.18%		
<hr/>						
Target Compounds						
<hr/>						

(#) = qualifier out of range (m) = manual integration (+) = signals summed

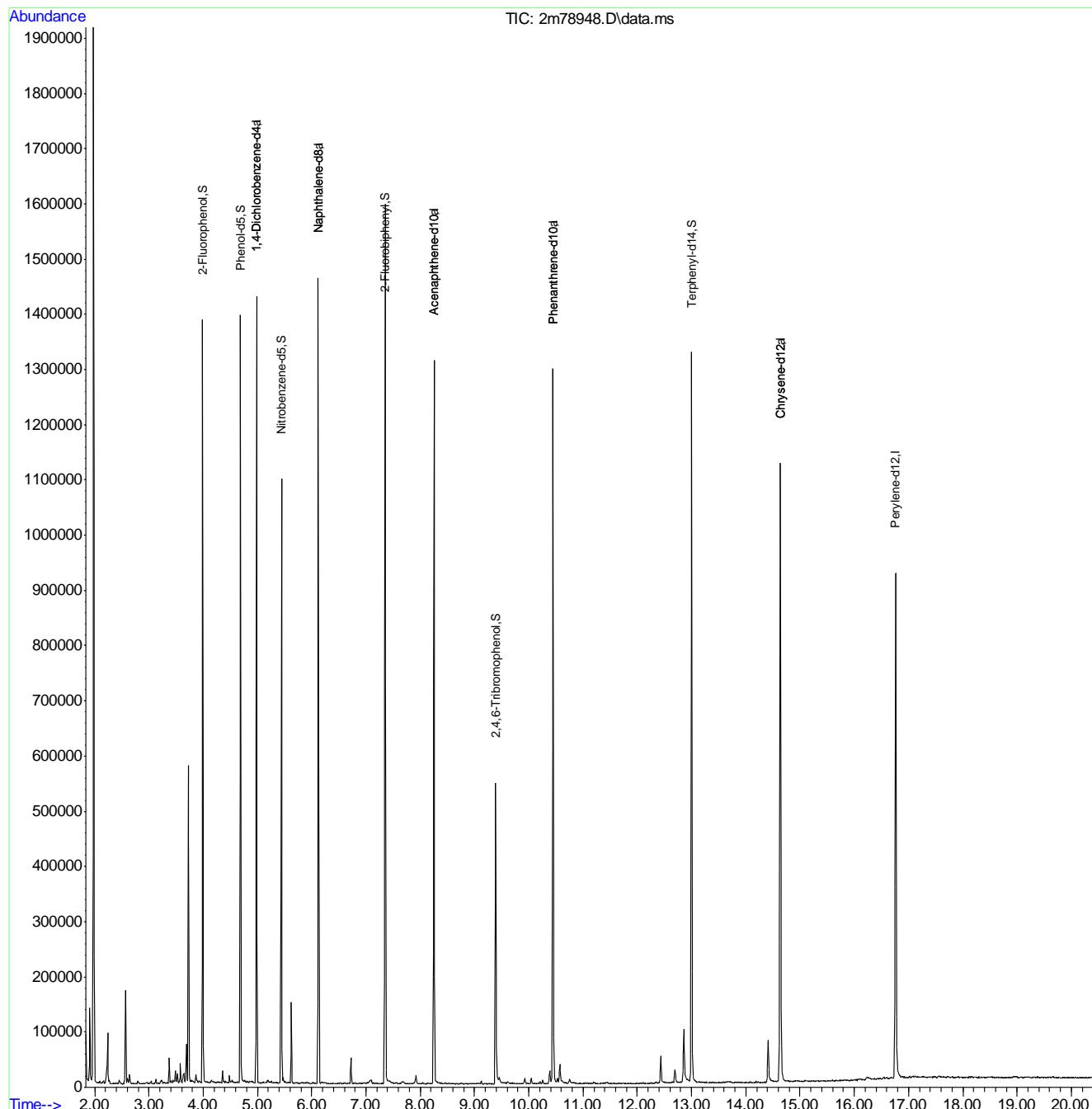
9.2.1

9

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m3443\  
 Data File : 2m78948.D  
 Acq On : 5 Nov 2015 7:47 pm  
 Operator : ashley  
 Sample : op88470-mb1  
 Misc : op88470,e2m3443,30.0  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Nov 06 11:28:04 2015  
 Quant Method : C:\MSDCHEM\1\METHODS\M2M3440.M  
 Quant Title : Semi Volatile GC/MS,rxi 5sil ms 30m .25mm .25um  
 QLast Update : Wed Nov 04 22:59:01 2015  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3375\  
 Data File : 3E77542.D  
 Acq On : 2 Nov 2015 11:46 pm  
 Operator : sarad  
 Sample : op88470-mb1  
 Misc : op88470,e3e3375,30.0  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 03 08:20:34 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zb-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration

9.2.2

9

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.663	152	97594	40.00	ppm	0.00
24) Naphthalene-d8	5.754	136	377439	40.00	ppm	0.00
47) Acenaphthene-d10	7.818	164	222897	40.00	ppm	0.00
69) Phenanthrene-d10	9.995	188	359193	40.00	ppm	0.00
83) Chrysene-d12	14.189	240	353432	40.00	ppm	-0.01
92) Perylene-d12	16.317	264	319489	40.00	ppm	-0.01
102) 1,4-Dichlorobenzene-d4a	4.663	152	97594	40.00	ppm	0.00
104) Acenaphthene-d10a	7.818	164	222897	40.00	ppm	0.00
106) Phenanthrene-d10a	9.995	188	359193	40.00	ppm	0.00
108) Chrysene-d12a	14.189	240	353432	40.00	ppm	-0.01
110) Naphthalene-d8a	5.754	136	377439	40.00	ppm	0.00
112) Chrysene-d12b	14.189	240	353432	40.00	ppm	-0.01
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.705	112	139727	44.71	ppm	0.00
Spiked Amount	50.000			Recovery	=	89.42%
8) Phenol-d5	4.427	99	166174	43.88	ppm	-0.02
Spiked Amount	50.000			Recovery	=	87.76%
25) Nitrobenzene-d5	5.107	82	153754	53.86	ppm	0.00
Spiked Amount	50.000			Recovery	=	107.72%
51) 2-Fluorobiphenyl	6.941	172	333067	47.21	ppm	-0.02
Spiked Amount	50.000			Recovery	=	94.42%
73) 2,4,6-Tribromophenol	8.958	330	57317	48.91	ppm	-0.02
Spiked Amount	50.000			Recovery	=	97.82%
85) Terphenyl-d14	12.552	244	347998	45.04	ppm	-0.04
Spiked Amount	50.000			Recovery	=	90.08%

Target Compounds	Qvalue
(#) = qualifier out of range (m) = manual integration (+) = signals summed	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3E3375\  
 Data File : 3E77542.D  
 Acq On : 2 Nov 2015 11:46 pm  
 Operator : sarad  
 Sample : op88470-mb1  
 Misc : op88470,e3e3375,30.0  
 ALS Vial : 5 Sample Multiplier: 1

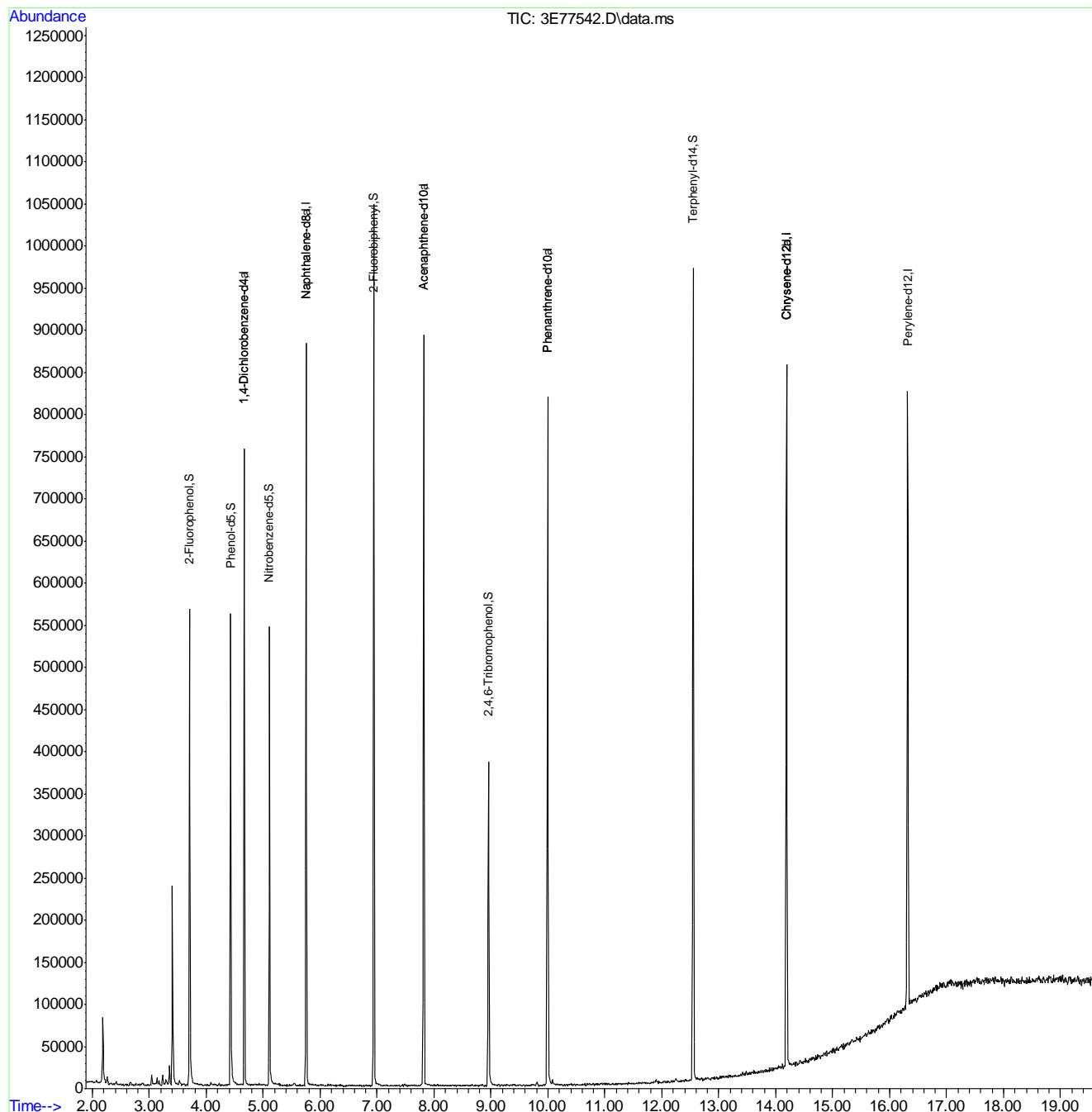
Quant Time: Nov 03 08:20:34 2015

Quant Method : C:\MSDCHEM\1\METHODS\M3E3323.M

Quant Title : Semi Volatile GC/MS, zB-5msi 30m x .25mm x .25MoTuMon Nov 02 23:01:31 2015

QLast Update : Mon Nov 02 23:01:31 2015

Response via : Initial Calibration





## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
Analyst: ND      Run ID: MA37952  
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:14	MA37952-STD1	1		STDA
10:20	MA37952-STD2	1		STDB
10:26	ZZZZZZ	1		
10:32	ZZZZZZ	1		
10:44	MA37952-ICV1	1		
11:02	MA37952-ICB1	1		
11:08	MA37952-ICCV1	1		
11:24	MA37952-CCB1	1		
11:31	ZZZZZZ	1		
11:37	MA37952-CRI1	1		
11:44	MA37952-CRID1	1		
11:50	MA37952-ICSA1	1		
11:56	MA37952-ICSAB1	1		
12:02	MA37952-HSTD1	1		
12:08	MA37952-HSTD2	1		
12:14	ZZZZZZ	1		
12:20	ZZZZZZ	1		
12:26	ZZZZZZ	1		
12:32	MA37952-CCV1	1		
12:38	MA37952-CCB2	1		
12:44	ZZZZZZ	1		
12:51	MP90011-MB2	1		
12:57	MP90011-B2	1		
13:03	ZZZZZZ	1		
13:09	ZZZZZZ	1		
13:15	MP90055-MB1	1		
13:21	MP90055-B1	1		
13:27	ZZZZZZ	1		
13:33	MP90010-B1	1		TLNJ not needed, addon
13:39	MA37952-CCV2	1		
13:45	MA37952-CCB3	1		No TLNJ
13:51	MA37952-CRI2	1		
13:57	MA37952-CRID2	1		TL out

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
Analyst: ND      Run ID: MA37952  
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:03	MP90010-MB1	1		TLNJ not needed, addon
14:09	ZZZZZZ	1		
14:15	ZZZZZZ	1		
14:21	MP89855-S1	10		
14:27	MP89855-S2	10		
14:33	JC6739-1	10		(sample used for QC only; not part of login JC7097)
14:40	MP89855-SD1	50		
14:46	MA37952-CCV3	1		
14:52	MA37952-CCB4	1		
14:58	MP90017-MB1	1		
15:04	ZZZZZZ	1		
15:10	ZZZZZZ	1		
15:16	ZZZZZZ	1		
15:24	MP90040-S1	1		
15:30	MP90040-S2	1		
15:36	JC7541-2A	1		(sample used for QC only; not part of login JC7097)
15:42	MP90040-SD1	5		
15:48	ZZZZZZ	1		
15:54	MA37952-CCV4	1		
16:00	MA37952-CCB5	1		No TLNJ
16:06	MP90040-B1	1		
16:12	MP90040-MB1	1		
-----> Last reportable sample/prep for job JC7097				
16:18	MA37952-CRI3	1		
16:31	MA37952-CCV5	1		
16:42	MA37952-CCB6	1		
-----> Last reportable CCB for job JC7097 Refer to raw data for calibration curve and standards.				

## INTERNAL STANDARD SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP

Date Analyzed: 11/04/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA37952

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
10:14	MA37952-STD1	2441 R	86732 R	13678 R	5332 R
10:20	MA37952-STD2	2339	81418	13549	4755
10:26	ZZZZZZ	2397	83767	13724	4935
10:32	ZZZZZZ	2448	87619	13673	5347
10:44	MA37952-ICV1	2397	83822	13743	4928
11:02	MA37952-ICB1	2447	87920	13802	5348
11:08	MA37952-ICCV1	2392	84132	13825	4924
11:24	MA37952-CCB1	2446	87952	13796	5348
11:31	ZZZZZZ	2426	86942	13780	5261
11:37	MA37952-CRI1	2431	87042	13774	5266
11:44	MA37952-CRID1	2438	87932	13771	5319
11:50	MA37952-ICSA1	2197	75984	13449	4365
11:56	MA37952-ICSAB1	2198	76019	13509	4367
12:02	MA37952-HSTD1	2423	86582	13921	5250
12:08	MA37952-HSTD2	2273	78919	13615	4450
12:14	ZZZZZZ	2405	86215	13782	5299
12:20	ZZZZZZ	2397	88141	13892	5326
12:26	ZZZZZZ	2436	88782	14057	5332
12:32	MA37952-CCV1	2385	84839	14000	4912
12:38	MA37952-CCB2	2438	88860	13964	5330
12:44	ZZZZZZ	No results reported for the elements associated with this internal standard.			
12:51	MP90011-MB2	2504	90631	14281	5512
12:57	MP90011-B2	2459	87922	14322	5170
13:03	ZZZZZZ	2313	80955	13841	4604
13:09	ZZZZZZ	2320	82680	13819	4760
13:15	MP90055-MB1	2433	89035	14247	5328
13:21	MP90055-B1	2391	86171	14084	5027
13:27	ZZZZZZ	2352	82235	14296	4550
13:33	MP90010-B1	2418	86222	14112	5065
13:39	MA37952-CCV2	2389	85006	13968	4922
13:45	MA37952-CCB3	2440	88182	13824	5340
13:51	MA37952-CRI2	2428	87167	13782	5269
13:57	MA37952-CRID2	2440	87922	13780	5327

## INTERNAL STANDARD SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP

Date Analyzed: 11/04/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA37952

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
14:03	MP90010-MB1	2445	88728	13935	5364
14:09	ZZZZZZ	2455	88864	14031	5383
14:15	ZZZZZZ	2510	90938	14252	5522
14:21	MP89855-S1	2234	78108	13484	4413
14:27	MP89855-S2	2235	78656	13609	4418
14:33	JC6739-1	2227	78266	13505	4415
14:40	MP89855-SD1	2359	84067	13806	4921
14:46	MA37952-CCV3	2394	85202	13920	4928
14:52	MA37952-CCB4	2443	88776	14004	5343
14:58	MP90017-MB1	2428	88490	14035	5329
15:04	ZZZZZZ	2566	90350	14977	5132
15:10	ZZZZZZ	2438	88800	13965	5334
15:16	ZZZZZZ	2439	89136	14130	5358
15:24	MP90040-S1	2420	86202	14221	4935
15:30	MP90040-S2	2421	86726	14331	4932
15:36	JC7541-2A	2509	90333	14619	5198
15:42	MP90040-SD1	2470	89488	14222	5292
15:48	ZZZZZZ	2512	90163	14821	5191
15:54	MA37952-CCV4	2390	84847	13948	4924
16:00	MA37952-CCB5	2437	88689	13850	5338
16:06	MP90040-B1	2397	86060	13963	5031
16:12	MP90040-MB1	2447	89221	14040	5362
16:18	MA37952-CRI3	2428	87532	13923	5273
16:31	MA37952-CCV5	2401	85074	13898	4939
16:42	MA37952-CCB6	2452	88387	13839	5362

R = Reference for ISTD limits. ! = Outside limits.

## LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

10.1.1  
10

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37952      Units: ug/l

Metal	Time: Sample ID: RL	11:02 ICB1 raw		11:24 CCB1 raw		12:38 CCB2 raw		13:45 CCB3 raw		final
		IDL	final	raw	final	raw	final	raw	final	
Aluminum	200	5.7	anr							
Antimony	6.0	1.7	anr							
Arsenic	3.0	2.5	anr							
Barium	200	.23	anr							
Beryllium	1.0	.038	anr							
Bismuth	20	1.6								
Boron	100	1.4								
Cadmium	3.0	.27	anr							
Calcium	5000	31	anr							
Chromium	10	.57	anr							
Cobalt	50	.37	-0.20	<50	0.0	<50	-0.10	<50	0.20	<50
Copper	10	.49	anr							
Iron	100	3.1	anr							
Lead	3.0	1.4	0.90	<3.0	-0.30	<3.0	0.10	<3.0	0.50	<3.0
Lithium	20	3.1								
Magnesium	5000	30	anr							
Manganese	15	.14	anr							
Molybdenum	20	.41	anr							
Nickel	10	.44	0.0	<10	0.0	<10	-0.10	<10	0.0	<10
Palladium	50	1.4								
Potassium	10000	45	anr							
Selenium	10	2.3	anr							
Silicon	200	4.6								
Silver	10	.35	anr							
Sodium	10000	16	anr							
Sulfur	50	7.3								
Strontium	10	.076								
Thallium	2.0	1.9	anr							
Tin	10	1.4								
Titanium	10	.4								
Tungsten	50	1.5								
Vanadium	50	.29	-0.20	<50	-0.10	<50	0.10	<50	0.10	<50
Zinc	20	1.4	0.20	<20	0.20	<20	0.30	<20	0.20	<20

10.1.2  
**10**

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37952      Units: ug/l

Time:	11:02	11:24	12:38	13:45						
Sample ID:	ICB1	CCB1	CCB2	CCB3						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final

Zirconium      10      .31

(\*) Outside of QC limits  
(anr) Analyte not requested

10.1.2  
**10**

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37952      Units: ug/l

Metal	Time: Sample ID: RL	14:52 CCB4		16:00 CCB5		16:42 CCB6		final
		raw	final	raw	final	raw	final	
Aluminum	200	5.7	anr					
Antimony	6.0	1.7	anr					
Arsenic	3.0	2.5	anr					
Barium	200	.23	anr					
Beryllium	1.0	.038	anr					
Bismuth	20	1.6						
Boron	100	1.4						
Cadmium	3.0	.27	anr					
Calcium	5000	31	anr					
Chromium	10	.57	anr					
Cobalt	50	.37	0.20	<50	0.10	<50	0.10	<50
Copper	10	.49	anr					
Iron	100	3.1	anr					
Lead	3.0	1.4	0.50	<3.0	0.30	<3.0	-0.40	<3.0
Lithium	20	3.1						
Magnesium	5000	30	anr					
Manganese	15	.14	anr					
Molybdenum	20	.41	anr					
Nickel	10	.44	0.0	<10	0.0	<10	-0.30	<10
Palladium	50	1.4						
Potassium	10000	45	anr					
Selenium	10	2.3	anr					
Silicon	200	4.6						
Silver	10	.35	anr					
Sodium	10000	16	anr					
Sulfur	50	7.3						
Strontium	10	.076						
Thallium	2.0	1.9	anr					
Tin	10	1.4						
Titanium	10	.4						
Tungsten	50	1.5						
Vanadium	50	.29	0.20	<50	-0.20	<50	0.30	<50
Zinc	20	1.4	0.30	<20	0.0	<20	-0.10	<20

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37952      Units: ug/l

Time: Sample ID: Metal	14:52 CCB4 RL	16:00 CCB5 raw	16:42 CCB6 final
Zirconium	10	.31	

(\*) Outside of QC limits  
(anr) Analyte not requested

10.1.2  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial Continuing Calibration Check

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP

QC Limits: 95 to 105 % Recovery

Date Analyzed: 11/04/15

Run ID: MA37952

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Metal	Time: Sample ID: Metal	11:08 ICCV True	Results ICCV1	% Rec
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	2000	2010	100.5	
Copper	anr			
Iron	anr			
Lead	2000	2030	101.5	
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	2000	2030	101.5	
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Sulfur				
Strontium				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	2000	2000	100.0	
Zinc	2000	2030	101.5	

CALIBRATION CHECK STANDARDS SUMMARY  
Initial Continuing Calibration Check

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP  
QC Limits: 95 to 105 % Recovery

Date Analyzed: 11/04/15  
Run ID: MA37952

Methods: EPA 200.7, SW846 6010C  
Units: ug/l

Time:	11:08
Sample ID:	ICCV
Metal	True
Results	% Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.1.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 95 to 105 % Recovery      Run ID: MA37952      Units: ug/l

Metal	Time: Sample ID: True	10:44 ICV1 Results		CCV True	12:32 CCV1 Results		CCV True	13:39 CCV2 Results	
		% Rec			% Rec			% Rec	
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	2020	101.0	2000	2020	101.0	2000	2020	101.0
Copper	anr								
Iron	anr								
Lead	2000	2040	102.0	2000	2040	102.0	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	2000	2040	102.0	2000	2020	101.0	2000	2020	101.0
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	2020	101.0	2000	1980	99.0	2000	1970	98.5
Zinc	2000	2040	102.0	2000	2010	100.5	2000	2010	100.5

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP Date Analyzed: 11/04/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 95 to 105 % Recovery Run ID: MA37952 Units: ug/l

Time:	10:44	12:32	13:39	
Sample ID:	ICV	CCV	CCV	
Metal	True	Results % Rec	True	Results % Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.1.4  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 95 to 105 % Recovery      Run ID: MA37952      Units: ug/l

Metal	Time: Sample ID: True	14:46 CCV Results		15:54 CCV Results		16:31 CCV Results	
		% Rec	CCV	% Rec	CCV	% Rec	
Aluminum	anr						
Antimony	anr						
Arsenic	anr						
Barium	anr						
Beryllium	anr						
Bismuth							
Boron							
Cadmium	anr						
Calcium	anr						
Chromium	anr						
Cobalt	2000	2020	101.0	2000	2020	101.0	2000
Copper	anr						
Iron	anr						
Lead	2000	2040	102.0	2000	2030	101.5	2000
Lithium							
Magnesium	anr						
Manganese	anr						
Molybdenum	anr						
Nickel	2000	2030	101.5	2000	2020	101.0	2000
Palladium							
Potassium	anr						
Selenium	anr						
Silicon							
Silver	anr						
Sodium	anr						
Sulfur							
Strontium							
Thallium	anr						
Tin							
Titanium							
Tungsten							
Vanadium	2000	1970	98.5	2000	1980	99.0	2000
Zinc	2000	2010	100.5	2000	2000	100.0	2000
							2020
							101.0

10.1.4  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP

QC Limits: 95 to 105 % Recovery

Date Analyzed: 11/04/15

Run ID: MA37952

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Time:	14:46	CCV	CCV3	Results	% Rec	True	CCV	CCV4	Results	% Rec	True	CCV	CCV5	Results	% Rec
Metal															

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.1.4

10

## HIGH STANDARD CHECK SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP

QC Limits: 95 to 105 % Recovery

Date Analyzed: 11/04/15

Run ID: MA37952

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Time:	12:02	HSTD	HSTD1	12:08	HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec	

Aluminum

Antimony anr

Arsenic anr

Barium anr

Beryllium anr

Bismuth

Boron

Cadmium anr

Calcium

Chromium anr

Cobalt 5000 5040 100.8

Copper anr

Iron

Lead 5000 5050 101.0

Lithium

Magnesium

Manganese anr

Molybdenum anr

Nickel 5000 5020 100.4

Palladium

Potassium

Selenium anr

Silicon

Silver anr

Sodium

Sulfur

Strontium

Thallium anr

Tin

Titanium

Tungsten

Vanadium 5000 5000 100.0

Zinc 5000 5170 103.4

10.1.5  
10

HIGH STANDARD CHECK SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP

QC Limits: 95 to 105 % Recovery

Date Analyzed: 11/04/15

Run ID: MA37952

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Time:	12:02	12:08				
Sample ID:	HSTD	HSTD1	HSTD	HSTD2		
Metal	True	Results	% Rec	True	Results	% Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.1.5  
10

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP  
QC Limits: 70 to 130 % Recovery

Date Analyzed: 11/04/15

Run ID: MA37952

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Metal	Time:		CRI1 True	CRIA True	CRID True	11:37		11:44		13:51	
	Sample ID:	CRI				Results	% Rec	CRIDL Results	% Rec	CRI2 Results	% Rec
Aluminum	200	500	100			anr					
Antimony	6.0	20		3.0		anr					
Arsenic	8.0	20		3.0		anr					
Barium	200			4.0		anr					
Beryllium	2.0			1.0		anr					
Bismuth	20										
Boron	100			10							
Cadmium	3.0			1.0		anr					
Calcium	5000	2000	1000			anr					
Chromium	10			2.0		anr					
Cobalt	50			3.0	49.9	99.8	3.0	100.0	49.7	99.4	
Copper	10			2.0		anr					
Iron	100	500				anr					
Lead	3.0	20	2.5	2.8	93.3	2.0	80.0	3.4	113.3		
Lithium	20										
Magnesium	5000	2000	100			anr					
Manganese	15			3.0		anr					
Molybdenum	20					anr					
Nickel	10			4.0	9.9	99.0	4.1	102.5	10.1	101.0	
Palladium	50										
Potassium	5000		2000			anr					
Selenium	10	20	5.0			anr					
Silicon	200										
Silver	5.0			2.0		anr					
Sodium	5000		1000			anr					
Sulfur	50										
Strontium	10										
Thallium	10			2.0		anr					
Tin	10										
Titanium	10										
Tungsten	50										
Vanadium	50			2.0	50.1	100.2	2.0	100.0	50.1	100.2	
Zinc	20			10	20.2	101.0	10.6	106.0	20.1	100.5	

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP

QC Limits: 70 to 130 % Recovery

Date Analyzed: 11/04/15

Run ID: MA37952

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Metal	Time:		11:37		11:44		13:51		
	Sample ID:	Metal	CRI	CRIA	CRID	CRI1	CRIDL	CRI2	
			True	True	True	Results	% Rec	Results	% Rec

Zirconium 10

(\*) Outside of QC limits  
(anr) Analyte not requested10.1.6  
10

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PAFile ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 70 to 130 % Recovery      Run ID: MA37952      Units: ug/l

Metal	Time:		13:57		16:18				
	Sample ID:	CRI	CRIA	CRID	CRID2	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000	2000	1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	3.1	103.3	50.0	100.0		
Copper	10		2.0	anr					
Iron	100	500							
Lead	3.0	20	2.5	2.1	84.0	3.0	100.0		
Lithium	20								
Magnesium	5000	2000	100	anr					
Manganese	15		3.0	anr					
Molybdenum	20								
Nickel	10		4.0	4.2	105.0	10.2	102.0		
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		2.0	anr					
Sodium	5000		1000	anr					
Sulfur	50								
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	1.9	95.0	49.4	98.8		
Zinc	20		10	10.6	106.0	19.9	99.5		

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PAFile ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 70 to 130 % Recovery      Run ID: MA37952      Units: ug/l

Time:	13:57			16:18		
Sample ID:	CRI	CRIA	CRID	CRID2	CRI3	
Metal	True	True	True	Results	% Rec	Results

Zirconium 10

(\*) Outside of QC limits  
(anr) Analyte not requested

10.1.6

10

**INTERFERING ELEMENT CHECK STANDARDS SUMMARY**  
**Part 1 - ICSA and ICSAB Standards**

Login Number: JC7097  
 Account: SECORPAE - Stantec Consulting Services Inc.  
 Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP      Date Analyzed: 11/04/15      Methods: EPA 200.7, SW846 6010C  
 QC Limits: 80 to 120 % Recovery      Run ID: MA37952      Units: ug/l

Metal	Time:		11:50		11:56		
	Sample ID:	ICSA	ICSA1	Results	% Rec	ICSA1	Results
Aluminum	500000	500000	535000	107.0	535000	107.0	
Antimony		1000	0.70		1170	117.0	
Arsenic		1000	0.10		1110	111.0	
Barium		500	0.20		511	102.2	
Beryllium		500	1.0		504	100.8	
Bismuth		500	-0.40		546	109.2	
Boron			-0.50		-3.0		
Cadmium		1000	-0.40		1060	106.0	
Calcium	400000	400000	405000	101.3	395000	98.8	
Chromium		500	3.6		526	105.2	
Cobalt		500	2.2		510	102.0	
Copper		500	1.4		522	104.4	
Iron	200000	200000	200000	100.0	199000	99.5	
Lead		1000	-4.1		1010	101.0	
Lithium		500	6.4		566	113.2	
Magnesium	500000	500000	508000	101.6	513000	102.6	
Manganese		500	0.70		507	101.4	
Molybdenum		500	-1.1		516	103.2	
Nickel		1000	-1.7		1010	101.0	
Palladium		500	-21		563	112.6	
Potassium			181		157		
Selenium		1000	9.3		1120	112.0	
Silicon			7.6		6.0		
Silver		1000	2.9		1120	112.0	
Sodium			65.8		57.1		
Sulfur		500	20.8		589	117.8	
Strontium			7.9		6.8		
Thallium		1000	2.2		1020	102.0	
Tin			-2.6		-3.9		
Titanium			3.5		2.3		
Tungsten		500	6.3		544	108.8	
Vanadium		500	-2.7		512	102.4	
Zinc		1000	-5.1		994	99.4	

INTERFERING ELEMENT CHECK STANDARDS SUMMARY  
Part 1 - ICSA and ICSAB Standards

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SD110415M1.ICP Date Analyzed: 11/04/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 80 to 120 % Recovery Run ID: MA37952 Units: ug/l

Time:	Sample ID:	ICSA	ICSAB	11:50	11:56		
Metal		True	True	ICSA1	ICSAB1	Results	% Rec

Zirconium 500 11.4 397 79.4\*(a)

(\*) Outside of QC limits  
(anr) Analyte not requested  
(a) No samples reported for this element in the area bracketed by this QC.

10.1.7  
**10**

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
Analyst: ND      Run ID: MA37966  
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:40	MA37966-STD1	1		STDA
20:46	MA37966-STD2	1		STDB
20:52	ZZZZZZ	1		
20:58	ZZZZZZ	1		
21:04	MA37966-ICV1	1		
21:10	MA37966-ICB1	1		
21:16	MA37966-CCV1	1		
21:22	MA37966-CCB1	1		
21:28	MA37966-CRI1	1		
21:34	MA37966-CRID1	1		
21:40	MA37966-CRIA1	1		
21:46	MA37966-ICSA1	1		
21:52	MA37966-ICSAB1	1		
21:57	MA37966-HSTD1	1		
22:03	MA37966-HSTD2	1		
22:09	ZZZZZZ	1		
22:15	ZZZZZZ	1		
22:21	ZZZZZZ	1		
22:27	MA37966-CCV2	1		
22:33	MA37966-CCB2	1		
22:39	MA37966-CRID2	1		
22:45	MA37966-CRI2	1		
22:51	ZZZZZZ	1		
22:57	ZZZZZZ	1		
23:03	ZZZZZZ	1		
23:08	ZZZZZZ	1		
23:14	ZZZZZZ	1		
23:20	MA37966-CCV3	1		
23:26	MA37966-CCB3	1		
23:32	MP90010-S1	1		
23:38	MP90010-S2	1		
23:43	JC7141-1A	1		(sample used for QC only; not part of login JC7097)
23:49	MP90010-SD1	5		

10.2  
10

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
Analyst: ND      Run ID: MA37966  
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:55	ZZZZZZ	1		
00:01	ZZZZZZ	1		
00:07	ZZZZZZ	2		
00:13	ZZZZZZ	1		
00:19	MA37966-CCV4	1		
00:25	MA37966-CCB4	1		
00:31	ZZZZZZ	2		
00:37	ZZZZZZ	2		
00:43	ZZZZZZ	3		
00:48	ZZZZZZ	1		
00:54	ZZZZZZ	2		
01:00	ZZZZZZ	20		
01:06	ZZZZZZ	1		
01:12	ZZZZZZ	2		
01:18	ZZZZZZ	20		
01:24	MA37966-CCV5	1		
01:30	MA37966-CCB5	1		
01:36	ZZZZZZ	1		
01:42	ZZZZZZ	5		
01:47	ZZZZZZ	10		
01:53	ZZZZZZ	1		
01:59	MP89969-S1	2		
02:05	MP89969-S2	2		
02:11	JC7035-55A	2		(sample used for QC only; not part of login JC7097)
02:17	MP89969-SD1	10		
02:23	ZZZZZZ	5		
02:28	ZZZZZZ	2		
02:34	MA37966-CCV6	1		
02:40	MA37966-CCB6	1		
02:46	ZZZZZZ	5		
02:52	ZZZZZZ	50		
02:58	ZZZZZZ	5		
03:04	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
Analyst: ND      Run ID: MA37966  
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
03:10	ZZZZZ	2		
03:16	ZZZZZ	1		
03:22	JC7097-1	1		
03:27	JC7097-2	1		
03:33	JC7097-3	1		
03:39	JC7097-4	1		
03:45	MA37966-CCV7	1		
03:51	MA37966-CCB7	1		
03:57	MP90054-B1	1		
04:03	MP90054-MB1	1		
04:09	MP90054-S1	1		
04:14	MP90054-S2	1		
04:20	JC7478-2	1		(sample used for QC only; not part of login JC7097)
04:26	MP90054-SD1	5		
04:32	ZZZZZ	1		
04:38	ZZZZZ	1		
04:44	ZZZZZ	1		
04:50	MA37966-CCV8	1		
04:56	MA37966-CCB8	1		
05:02	MA37966-CRID3	1		
05:08	MA37966-CRI3	1		
05:14	MA37966-CRIA2	1		
05:20	ZZZZZ	1		
05:26	MA37966-ICSA2	1		
05:32	MA37966-ICSAB2	1		
05:37	MA37966-CCV9	1		
05:43	MA37966-CCB9	1		
05:49	ZZZZZ	1		
05:55	ZZZZZ	1		
06:01	ZZZZZ	1		
06:07	ZZZZZ	1		
06:13	ZZZZZ	1		
06:19	ZZZZZ	1		

10.2  
10

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
Analyst: ND      Run ID: MA37966  
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
06:25	ZZZZZZ	1		
06:31	ZZZZZZ	1		
06:37	ZZZZZZ	1		
06:43	ZZZZZZ	1		
06:49	MA37966-CCV10	1		
06:55	MA37966-CCB10	1		
07:01	JC7097-5	1		
-----> Last reportable sample/prep for job JC7097				
07:07	ZZZZZZ	1		
07:13	ZZZZZZ	1		
07:19	ZZZZZZ	1		
07:25	ZZZZZZ	1		
07:31	ZZZZZZ	1		
07:36	ZZZZZZ	1		
07:42	ZZZZZZ	1		
07:48	ZZZZZZ	1		
07:54	ZZZZZZ	1		
08:00	MA37966-CCV11	1		
08:06	MA37966-CCB11	1		
08:12	ZZZZZZ	1		
08:18	MA37966-CRID4	1		
08:24	MA37966-CRI4	1		
08:30	MA37966-CRIA3	1		
08:36	MA37966-CCV12	1		
08:41	MA37966-CCB12	1		
-----> Last reportable CCB for job JC7097				
Refer to raw data for calibration curve and standards.				

10.2  
**10**

## INTERNAL STANDARD SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP

Date Analyzed: 11/05/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA37966

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
20:40	MA37966-STD1	2225 R	73527 R	20678 R	3737 R
20:46	MA37966-STD2	2156	73260	20514	3671
20:52	ZZZZZZ	2205	74424	20939	3750
20:58	ZZZZZZ	2216	72721	20560	3731
21:04	MA37966-ICV1	2193	73390	20794	3729
21:10	MA37966-ICB1	2242	73613	21123	3778
21:16	MA37966-CCV1	2183	73534	20923	3721
21:22	MA37966-CCB1	2231	72159	20644	3757
21:28	MA37966-CRI1	No results reported for the elements associated with this internal standard.			
21:34	MA37966-CRID1	No results reported for the elements associated with this internal standard.			
21:40	MA37966-CRIA1	2229	73152	20863	3758
21:46	MA37966-ICSA1	2040	71262	20052	3446
21:52	MA37966-ICSAB1	2038	71123	20229	3453
21:57	MA37966-HSTD1	2202	73478	20753	3766
22:03	MA37966-HSTD2	2130	73241	20343	3565
22:09	ZZZZZZ	2209	73290	20530	3767
22:15	ZZZZZZ	2227	74462	21308	3785
22:21	ZZZZZZ	2230	73455	20920	3750
22:27	MA37966-CCV2	2183	72894	20580	3706
22:33	MA37966-CCB2	2227	72903	20946	3732
22:39	MA37966-CRID2	2213	73109	20952	3724
22:45	MA37966-CRI2	2220	73502	20807	3748
22:51	ZZZZZZ	2182	74015	20948	3721
22:57	ZZZZZZ	2278	77385	22193	3746
23:03	ZZZZZZ	2195	74973	21231	3719
23:08	ZZZZZZ	2194	74226	21034	3692
23:14	ZZZZZZ	2201	73154	21026	3722
23:20	MA37966-CCV3	2185	73331	20512	3705
23:26	MA37966-CCB3	2252	73053	20862	3763
23:32	MP90010-S1	2155	72980	20671	3666
23:38	MP90010-S2	2161	73175	21680	3679
23:43	JC7141-1A	2212	73718	20815	3752
23:49	MP90010-SD1	2225	73267	20911	3751

## INTERNAL STANDARD SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP

Date Analyzed: 11/05/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA37966

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:55	ZZZZZZ	2278	74159	21001	3804
00:01	ZZZZZZ	2248	72673	20569	3735
00:07	ZZZZZZ	2273	74559	20906	3776
00:13	ZZZZZZ	2261	75204	20943	3789
00:19	MA37966-CCV4	2266	74025	20499	3762
00:25	MA37966-CCB4	2344	75114	20467	3829
00:31	ZZZZZZ	2282	74410	20590	3783
00:37	ZZZZZZ	2310	75109	21410	3789
00:43	ZZZZZZ	2331	74442	20691	3835
00:48	ZZZZZZ	2325	74306	20907	3787
00:54	ZZZZZZ	2300	74237	20516	3762
01:00	ZZZZZZ	2343	73961	20684	3806
01:06	ZZZZZZ	2324	75607	20794	3737
01:12	ZZZZZZ	2311	74808	20782	3789
01:18	ZZZZZZ	2369	75085	20853	3848
01:24	MA37966-CCV5	2339	74170	20320	3808
01:30	MA37966-CCB5	2362	74326	20572	3796
01:36	ZZZZZZ	2344	74593	20659	3805
01:42	ZZZZZZ	2421	76335	21185	3904
01:47	ZZZZZZ	2357	74641	20633	3822
01:53	ZZZZZZ	2354	73864	20440	3789
01:59	MP89969-S1	2352	75808	20916	3795
02:05	MP89969-S2	2335	74996	20498	3767
02:11	JC7035-55A	2371	76190	20711	3822
02:17	MP89969-SD1	2367	73593	20492	3803
02:23	ZZZZZZ	2374	74209	20531	3816
02:28	ZZZZZZ	2336	74721	20484	3866
02:34	MA37966-CCV6	2335	75429	20686	3798
02:40	MA37966-CCB6	2380	74077	20478	3837
02:46	ZZZZZZ	2321	73862	20466	3812
02:52	ZZZZZZ	2345	74372	20611	3834
02:58	ZZZZZZ	2332	73997	20528	3807
03:04	ZZZZZZ	2333	74112	20800	3818

## INTERNAL STANDARD SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP

Date Analyzed: 11/05/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA37966

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:10	ZZZZZZ	2331	74981	20819	3819
03:16	ZZZZZZ	2286	75350	21232	3780
03:22	JC7097-1	2336	75490	21469	3830
03:27	JC7097-2	2315	75155	21042	3838
03:33	JC7097-3	2233	75504	21043	3660
03:39	JC7097-4	2350	76536	21530	3844
03:45	MA37966-CCV7	2266	73220	20077	3759
03:51	MA37966-CCB7	2308	73874	20577	3790
03:57	MP90054-B1	2286	73664	20555	3809
04:03	MP90054-MB1	2309	73512	20497	3810
04:09	MP90054-S1	2262	73093	20637	3779
04:14	MP90054-S2	2268	72779	20478	3797
04:20	JC7478-2	2291	74521	20711	3804
04:26	MP90054-SD1	2324	74063	20679	3827
04:32	ZZZZZZ	2304	74623	20741	3825
04:38	ZZZZZZ	2291	73721	20582	3813
04:44	ZZZZZZ	2325	74672	20859	3844
04:50	MA37966-CCV8	2297	74115	20259	3809
04:56	MA37966-CCB8	2304	73248	20548	3790
05:02	MA37966-CRID3	2340	74457	20660	3851
05:08	MA37966-CRI3	2316	73566	20319	3816
05:14	MA37966-CRIA2	2308	73147	20184	3794
05:20	ZZZZZZ	2317	73952	20624	3818
05:26	MA37966-ICSA2	2113	70759	19501	3485
05:32	MA37966-ICSAB2	2132	71239	19345	3510
05:37	MA37966-CCV9	2281	73920	20341	3787
05:43	MA37966-CCB9	2312	73659	20384	3805
05:49	ZZZZZZ	2331	75684	20274	3832
05:55	ZZZZZZ	2365	74847	20705	3878
06:01	ZZZZZZ	2309	73452	20440	3799
06:07	ZZZZZZ	2334	74025	20359	3837
06:13	ZZZZZZ	2313	73337	20283	3798
06:19	ZZZZZZ	2305	73209	20218	3798

## INTERNAL STANDARD SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP

Date Analyzed: 11/05/15

Methods: EPA 200.7, SW846 6010C

Analyst: ND

Run ID: MA37966

Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:25	ZZZZZZ	2345	74419	20825	3871
06:31	ZZZZZZ	2234	73785	19880	3717
06:37	ZZZZZZ	2328	73761	20687	3826
06:43	ZZZZZZ	2341	74025	20543	3860
06:49	MA37966-CCV10	2288	73276	20145	3787
06:55	MA37966-CCB10	2329	72972	20465	3826
07:01	JC7097-5	2349	75940	21239	3868
07:07	ZZZZZZ	2345	75106	21291	3832
07:13	ZZZZZZ	2383	76890	21694	3894
07:19	ZZZZZZ	2381	76790	21670	3868
07:25	ZZZZZZ	2362	75986	21475	3829
07:31	ZZZZZZ	2270	73815	20581	3745
07:36	ZZZZZZ	2346	73328	20350	3806
07:42	ZZZZZZ	2342	73279	20409	3789
07:48	ZZZZZZ	2311	73920	20563	3789
07:54	ZZZZZZ	2296	73432	20303	3763
08:00	MA37966-CCV11	2334	74300	20316	3808
08:06	MA37966-CCB11	2371	73916	20334	3815
08:12	ZZZZZZ	2399	75260	20598	3875
08:18	MA37966-CRID4	2360	73563	20353	3792
08:24	MA37966-CRI4	2415	75730	20735	3900
08:30	MA37966-CRIA3	2374	73742	20313	3822
08:36	MA37966-CCV12	2355	74581	20203	3821
08:41	MA37966-CCB12	2370	73940	20449	3808

R = Reference for ISTD limits. ! = Outside limits.

## LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Metal	Time: Sample ID: RL	IDL	21:10 ICB1		21:22 CCB1		22:33 CCB2		23:26 CCB3	
			raw	final	raw	final	raw	final	raw	final
Aluminum	200	20	anr							
Antimony	6.0	1.6	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.4	anr							
Beryllium	1.0	.2	anr							
Bismuth	20	1.5								
Boron	100	.9								
Cadmium	3.0	.4	anr							
Calcium	2000	25	anr							
Chromium	10	.8	anr							
Cobalt	50	.3	0.50	<50	0.20	<50	0.30	<50	0.30	<50
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1	0.60	<3.0	-0.60	<3.0	1.9	<3.0	1.8	<3.0
Lithium	20	1.9								
Magnesium	2000	44	anr							
Manganese	15	.2	anr							
Molybdenum	20	.4	anr							
Nickel	10	.5	0.60	<10	0.30	<10	1.2	<10	0.60	<10
Palladium	50	1.8								
Potassium	2000	48	anr							
Selenium	10	2.7	anr							
Silicon	200	8.9								
Silver	10	.8	anr							
Sodium	2000	29	anr							
Sulfur	50	4.4								
Strontium	10	.2								
Thallium	2.0	1.5	anr							
Tin	10	1								
Titanium	10	.6								
Tungsten	50	2.8								
Vanadium	50	.5	0.40	<50	0.30	<50	0.10	<50	0.40	<50
Zinc	20	2.3	0.20	<20	0.40	<20	0.10	<20	0.20	<20

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Time:	21:10	21:22	22:33	23:26						
Sample ID:	ICB1	CCB1	CCB2	CCB3						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final

Zirconium      10      .4

(\*) Outside of QC limits  
(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Metal	Time: Sample ID: RL	IDL	00:25 CCB4		01:30 CCB5		02:40 CCB6		03:51 CCB7	
			raw	final	raw	final	raw	final	raw	final
Aluminum	200	20	anr							
Antimony	6.0	1.6	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.4	anr							
Beryllium	1.0	.2	anr							
Bismuth	20	1.5								
Boron	100	.9								
Cadmium	3.0	.4	anr							
Calcium	2000	25	anr							
Chromium	10	.8	anr							
Cobalt	50	.3	0.40	<50	0.20	<50	0.40	<50	-0.10	<50
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1	2.4	<3.0	1.0	<3.0	2.0	<3.0	-0.60	<3.0
Lithium	20	1.9								
Magnesium	2000	44	anr							
Manganese	15	.2	anr							
Molybdenum	20	.4	anr							
Nickel	10	.5	0.40	<10	-0.60	<10	-0.20	<10	0.50	<10
Palladium	50	1.8								
Potassium	2000	48	anr							
Selenium	10	2.7	anr							
Silicon	200	8.9								
Silver	10	.8	anr							
Sodium	2000	29	anr							
Sulfur	50	4.4								
Strontium	10	.2								
Thallium	2.0	1.5	anr							
Tin	10	1								
Titanium	10	.6								
Tungsten	50	2.8								
Vanadium	50	.5	0.80	<50	0.40	<50	0.70	<50	0.50	<50
Zinc	20	2.3	0.10	<20	0.30	<20	0.70	<20	0.50	<20

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Time: Sample ID:	00:25 CCB4	01:30 CCB5	02:40 CCB6	03:51 CCB7						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final

Zirconium      10      .4

(\*) Outside of QC limits  
(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Metal	Time: Sample ID: RL	04:56 CCB8		05:43 CCB9		06:55 CCB10		08:06 CCB11	
		raw	final	raw	final	raw	final	raw	final
Aluminum	200	20	anr						
Antimony	6.0	1.6	anr						
Arsenic	3.0	1.4	anr						
Barium	200	.4	anr						
Beryllium	1.0	.2	anr						
Bismuth	20	1.5							
Boron	100	.9							
Cadmium	3.0	.4	anr						
Calcium	2000	25	anr						
Chromium	10	.8	anr						
Cobalt	50	.3	0.30	<50	0.40	<50	0.40	<50	0.20
Copper	10	.8	anr						
Iron	100	10	anr						
Lead	3.0	1	-0.80	<100	0.50	<100	2.5	<100	2.6
Lithium	20	1.9							
Magnesium	2000	44	anr						
Manganese	15	.2	anr						
Molybdenum	20	.4	anr						
Nickel	10	.5	0.50	<10	0.40	<10	-0.10	<10	0.0
Palladium	50	1.8							
Potassium	2000	48	anr						
Selenium	10	2.7	anr						
Silicon	200	8.9							
Silver	10	.8	anr						
Sodium	2000	29	anr						
Sulfur	50	4.4							
Strontium	10	.2							
Thallium	2.0	1.5	anr						
Tin	10	1							
Titanium	10	.6							
Tungsten	50	2.8							
Vanadium	50	.5	0.30	<50	0.70	<50	0.40	<50	0.50
Zinc	20	2.3	0.80	<20	0.0	<20	0.0	<20	0.20

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Time: Sample ID:	04:56 CCB8	05:43 CCB9	06:55 CCB10	08:06 CCB11						
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final

Zirconium      10      .4

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.2  
**10**

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Metal	Sample ID: RL	Time: 08:41 CCB12		final
		IDL	raw	
Aluminum	200	20	anr	
Antimony	6.0	1.6	anr	
Arsenic	3.0	1.4	anr	
Barium	200	.4	anr	
Beryllium	1.0	.2	anr	
Bismuth	20	1.5		
Boron	100	.9		
Cadmium	3.0	.4	anr	
Calcium	2000	25	anr	
Chromium	10	.8	anr	
Cobalt	50	.3	0.50	<50
Copper	10	.8	anr	
Iron	100	10	anr	
Lead	3.0	1	2.6	<3.0
Lithium	20	1.9		
Magnesium	2000	44	anr	
Manganese	15	.2	anr	
Molybdenum	20	.4	anr	
Nickel	10	.5	0.10	<10
Palladium	50	1.8		
Potassium	2000	48	anr	
Selenium	10	2.7	anr	
Silicon	200	8.9		
Silver	10	.8	anr	
Sodium	2000	29	anr	
Sulfur	50	4.4		
Strontium	10	.2		
Thallium	2.0	1.5	anr	
Tin	10	1		
Titanium	10	.6		
Tungsten	50	2.8		
Vanadium	50	.5	0.20	<50
Zinc	20	2.3	0.20	<20

10.2.2  
**10**

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: result < RL      Run ID: MA37966      Units: ug/l

Metal	Time: Sample ID: RL	IDL	raw	final
Zirconium	10	.4		

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.2  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery      Run ID: MA37966      Units: ug/l

Metal	Time: Sample ID: True	21:04 ICV1 Results		CCV True	21:16 CCV1 Results		CCV True	22:27 CCV2 Results	
		% Rec			% Rec			% Rec	
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	2020	101.0	2000	2030	101.5	2000	2030	101.5
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	2010	100.5	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	2000	2030	101.5	2000	2030	101.5	2000	2050	102.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	2020	101.0	2000	2030	101.5	2000	2030	101.5
Zinc	2000	2050	102.5	2000	2060	103.0	2000	2070	103.5

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP Date Analyzed: 11/05/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA37966 Units: ug/l

Time:	21:04	21:16	22:27	
Sample ID:	ICV	CCV1	CCV2	
Metal	True	Results % Rec	True	Results % Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery      Run ID: MA37966      Units: ug/l

Metal	Time:	23:20		00:19		01:24		Results	% Rec
	Sample ID:	CCV	CCV3	CCV	CCV4	CCV	CCV5		
Aluminum	True			True		True			
Antimony		anr							
Arsenic		anr							
Barium		anr							
Beryllium		anr							
Bismuth									
Boron									
Cadmium		anr							
Calcium		anr							
Chromium		anr							
Cobalt	2000	2030	101.5	2000	2040	102.0	2000	2060	103.0
Copper		anr							
Iron		anr							
Lead	2000	2040	102.0	2000	2060	103.0	2000	2100	105.0
Lithium									
Magnesium		anr							
Manganese		anr							
Molybdenum		anr							
Nickel	2000	2040	102.0	2000	2060	103.0	2000	2090	104.5
Palladium									
Potassium		anr							
Selenium		anr							
Silicon									
Silver		anr							
Sodium		anr							
Sulfur									
Strontium									
Thallium		anr							
Tin									
Titanium									
Tungsten									
Vanadium	2000	2030	101.5	2000	2040	102.0	2000	2090	104.5
Zinc	2000	2060	103.0	2000	2070	103.5	2000	2080	104.0

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP Date Analyzed: 11/05/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA37966 Units: ug/l

Time:	23:20	00:19	01:24									
Metal	Sample ID:	Results	CCV	CCV3	True	CCV4	Results	CCV	CCV5	True	Results	% Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery      Run ID: MA37966      Units: ug/l

Metal	Time: Sample ID: True	02:34 CCV Results		03:45 CCV Results		04:50 CCV Results			
		CCV6	% Rec	CCV7	% Rec	CCV8	% Rec		
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	2070	103.5	2000	2070	103.5	2000	2030	101.5
Copper	anr								
Iron	anr								
Lead	2000	2110	105.5	2000	2100	105.0	2000	2060	103.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	2000	2100	105.0	2000	2100	105.0	2000	2060	103.0
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	2060	103.0	2000	2080	104.0	2000	2040	102.0
Zinc	2000	2090	104.5	2000	2120	106.0	2000	2070	103.5

10.2.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP Date Analyzed: 11/05/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA37966 Units: ug/l

Time:	02:34	03:45	04:50								
Metal	Sample ID:	Results	CCV	True	CCV6	CCV7	CCV	True	CCV8	Results	% Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery      Run ID: MA37966      Units: ug/l

Metal	Time: Sample ID: True	05:37 CCV Results		06:49 CCV Results		08:00 CCV Results		
		CCV9	% Rec	CCV10	% Rec	CCV11	% Rec	
Aluminum	anr							
Antimony	anr							
Arsenic	anr							
Barium	anr							
Beryllium	anr							
Bismuth								
Boron								
Cadmium	anr							
Calcium	anr							
Chromium	anr							
Cobalt	2000	2060	103.0	2000	2070	103.5	2000	2080
Copper	anr							
Iron	anr							
Lead	2000	2090	104.5	2000	2110	105.5	2000	2120
Lithium								
Magnesium	anr							
Manganese	anr							
Molybdenum	anr							
Nickel	2000	2090	104.5	2000	2100	105.0	2000	2110
Palladium								
Potassium	anr							
Selenium	anr							
Silicon								
Silver	anr							
Sodium	anr							
Sulfur								
Strontium								
Thallium	anr							
Tin								
Titanium								
Tungsten								
Vanadium	2000	2070	103.5	2000	2090	104.5	2000	2090
Zinc	2000	2100	105.0	2000	2120	106.0	2000	2110

10.2.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP Date Analyzed: 11/05/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA37966 Units: ug/l

Time:	05:37	06:49	08:00								
Metal	Sample ID:	Results	CCV	True	CCV9	CCV10	CCV11	Results	True	Results	% Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP Date Analyzed: 11/05/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA37966 Units: ug/l

Metal	Time: Sample ID: True	08:36 CCV Results	CCV12 % Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	2000	2060	103.0
Copper	anr		
Iron	anr		
Lead	2000	2100	105.0
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum	anr		
Nickel	2000	2100	105.0
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	2000	2070	103.5
Zinc	2000	2090	104.5

10.2.3  
**10**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 11/05/15

Run ID: MA37966

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Time:	08:36
Sample ID:	CCV
Metal	True

Results % Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.3

10

## HIGH STANDARD CHECK SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP  
QC Limits: 90 to 110 % RecoveryDate Analyzed: 11/05/15  
Run ID: MA37966Methods: EPA 200.7, SW846 6010C  
Units: ug/l

Time:	21:57	HSTD	HSTD1	22:03	HSTD	HSTD2
Metal	True	Results	% Rec	True	Results	% Rec

Aluminum

Antimony anr

Arsenic anr

Barium anr

Beryllium anr

Bismuth

Boron

Cadmium anr

Calcium

Chromium anr

Cobalt 5000 5070 101.4

Copper anr

Iron

Lead 5000 4990 99.8

Lithium

Magnesium

Manganese anr

Molybdenum anr

Nickel 5000 5130 102.6

Palladium

Potassium

Selenium anr

Silicon

Silver anr

Sodium

Sulfur

Strontium

Thallium anr

Tin

Titanium

Tungsten

Vanadium 5000 5050 101.0

Zinc 5000 5180 103.6

10.2.4  
**10**

HIGH STANDARD CHECK SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 11/05/15

Run ID: MA37966

Methods: EPA 200.7, SW846 6010C

Units: ug/l

Time:	21:57	22:03				
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec

Zirconium

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.4  
10

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
 QC Limits: CRI 70-130%    CRIA 70-130%      Run ID: MA37966      Units: ug/l

Metal	Time:		CRID	21:40		22:39		22:45	
	Sample ID:	CRI		CRIA	Results	% Rec	CRID2	% Rec	CRI2
Metal	True	True	True	CRID1	Results	% Rec	CRID2	% Rec	CRI2
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0						
Beryllium	2.0		1.0						
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0						
Calcium	5000	2000	1000	anr					
Chromium	10		2.0						
Cobalt	50		3.0			3.7	123.3	52.4	104.8
Copper	10		2.0						
Iron	100	500		anr					
Lead	3.0	20	2.5	21.6	108.0			2.2	73.3
Lithium	20								
Magnesium	5000	2000	100	anr					
Manganese	15		3.0						
Molybdenum	20								
Nickel	10		4.0			4.1	102.5	10.8	108.0
Palladium	50								
Potassium	5000		2000						
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		2.0						
Sodium	5000		1000						
Sulfur	50								
Strontium	10								
Thallium	10		2.0						
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0			2.0	100.0	51.0	102.0
Zinc	20		10			10.5	105.0	21.4	107.0

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: CRI 70-130%      CRIA 70-130%      Run ID: MA37966      Units: ug/l

Metal	Time:		21:40		22:39		22:45	
	Sample ID:	Metal	CRI	CRIA	CRID	CRIAl	CRID2	CRI2
Zirconium	True	True	True	True	Results	% Rec	Results	% Rec

Zirconium 10

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.5  
**10**

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
 QC Limits: CRI 70-130%    CRIA 70-130%      Run ID: MA37966      Units: ug/l

Metal	Time:		CRID	05:02		05:08		05:14					
	Sample ID:	CRI		CRIA	True	CRID3	Results	% Rec	CRI3	Results	% Rec	CRIA2	Results
Aluminum	200	500	100	anr									
Antimony	6.0	20	3.0	anr									
Arsenic	8.0	20	3.0	anr									
Barium	200		4.0	anr									
Beryllium	2.0		1.0	anr									
Bismuth	20												
Boron	100		10										
Cadmium	3.0		1.0	anr									
Calcium	5000	2000	1000	anr									
Chromium	10		2.0	anr									
Cobalt	50		3.0	3.3	110.0	52.7	105.4						
Copper	10		2.0										
Iron	100	500											
Lead	3.0	20	2.5				3.0	100.0	22.2	111.0			
Lithium	20												
Magnesium	5000	2000	100	anr									
Manganese	15		3.0	anr									
Molybdenum	20												
Nickel	10		4.0	4.2	105.0	10.3	103.0						
Palladium	50												
Potassium	5000		2000	anr									
Selenium	10	20	5.0										
Silicon	200												
Silver	5.0		2.0	anr									
Sodium	5000		1000	anr									
Sulfur	50												
Strontium	10												
Thallium	10		2.0	anr									
Tin	10												
Titanium	10												
Tungsten	50												
Vanadium	50		2.0	2.6	130.0	52.2	104.4						
Zinc	20		10	10.4	104.0	21.7	108.5						

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: CRI 70-130%      CRIA 70-130%      Run ID: MA37966      Units: ug/l

Metal	Time:		05:02		05:08		05:14					
	Sample ID:	Metal	CRI	CRIA	CRID	CRID3	Results	% Rec	Results	% Rec	Results	% Rec
Zirconium		10										

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.5  
**10**

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
 QC Limits: CRI 70-130%    CRIA 70-130%      Run ID: MA37966      Units: ug/l

Metal	Time:			08:18		08:24		08:30				
	Sample ID:	CRI	CRIA	CRID	CRID4	Results	% Rec	CRI4	Results	% Rec	CRIA3	% Rec
Aluminum	200	500	100		anr							
Antimony	6.0	20	3.0		anr							
Arsenic	8.0	20	3.0		anr							
Barium	200		4.0		anr							
Beryllium	2.0		1.0		anr							
Bismuth	20											
Boron	100		10									
Cadmium	3.0		1.0		anr							
Calcium	5000	2000	1000		anr							
Chromium	10		2.0		anr							
Cobalt	50		3.0	3.3		110.0		52.0		104.0		
Copper	10		2.0									
Iron	100	500										
Lead	3.0	20	2.5	2.9		116.0		5.6		186.7*(a) 21.4		107.0
Lithium	20											
Magnesium	5000	2000	100		anr							
Manganese	15		3.0		anr							
Molybdenum	20											
Nickel	10		4.0	4.3		107.5		10.5		105.0		
Palladium	50											
Potassium	5000		2000		anr							
Selenium	10	20	5.0		anr							
Silicon	200											
Silver	5.0		2.0		anr							
Sodium	5000		1000		anr							
Sulfur	50											
Strontium	10											
Thallium	10		2.0		anr							
Tin	10											
Titanium	10											
Tungsten	50											
Vanadium	50		2.0					51.9		103.8		
Zinc	20		10	11.3		113.0		21.5		107.5		

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
QC Limits: CRI 70-130%    CRIA 70-130%      Run ID: MA37966      Units: ug/l

Time:	08:18			08:24			08:30					
Sample ID:	CRI	CRIA	CRID	CRID4	Results	% Rec	CRI4	Results	% Rec	CRIA3	Results	% Rec
Metal	True	True	True									

Zirconium 10

(\*) Outside of QC limits  
(anr) Analyte not requested

(a) No AQ samples reported for this element in the area bracketed by this QC.

10.2.5  
**10**

**INTERFERING ELEMENT CHECK STANDARDS SUMMARY**  
**Part 1 - ICSA and ICSAB Standards**

Login Number: JC7097  
 Account: SECORPAE - Stantec Consulting Services Inc.  
 Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP      Date Analyzed: 11/05/15      Methods: EPA 200.7, SW846 6010C  
 QC Limits: 80 to 120 % Recovery      Run ID: MA37966      Units: ug/l

Metal	Time:		21:46		21:52		05:26		05:32	
	Sample ID:	ICSA	ICSA	ICSA1 Results	% Rec	ICSA1 Results	% Rec	ICSA2 Results	% Rec	ICSA2 Results
Aluminum	500000	500000	528000	105.6	535000	107.0	532000	106.4	540000	108.0
Antimony	1000		-1.6		1150	115.0	-2.5		1130	113.0
Arsenic	1000		-1.8		1080	108.0	-0.10		1080	108.0
Barium	500		-0.40		505	101.0	-0.40		501	100.2
Beryllium	500		0.80		509	101.8	0.80		521	104.2
Bismuth	500		-1.2		539	107.8	1.2		517	103.4
Boron			-0.90		-2.2		0.50		-2.8	
Cadmium	1000		0.30		1070	107.0	0.60		1050	105.0
Calcium	400000	400000	388000	97.0	386000	96.5	402000	100.5	402000	100.5
Chromium	500		0.50		504	100.8	2.2		520	104.0
Cobalt	500		5.9		524	104.8	6.6		535	107.0
Copper	500		0.10		545	109.0	-1.2		539	107.8
Iron	200000	200000	187000	93.5	194000	97.0	189000	94.5	197000	98.5
Lead	1000		3.7		1020	102.0	4.0		1060	106.0
Lithium	500		-6.4		562	112.4	-7.1		563	112.6
Magnesium	500000	500000	498000	99.6	503000	100.6	514000	102.8	522000	104.4
Manganese	500		1.3		507	101.4	0.20		523	104.6
Molybdenum	500		-3.5		517	103.4	-1.3		509	101.8
Nickel	1000		1.6		1010	101.0	1.8		1040	104.0
Palladium	500		-14		548	109.6	-10		548	109.6
Potassium			2.0		32.0		22.5		53.7	
Selenium	1000		2.7		1100	110.0	-0.70		1060	106.0
Silicon			12.8		4.8		13.1		9.7	
Silver	1000		4.9		1090	109.0	0.40		1090	109.0
Sodium			-10		-8.8		-20		-22	
Sulfur	500		17.6		583	116.6	17.6		573	114.6
Strontium			6.1		6.1		5.3		5.1	
Thallium	1000		-1.4		1020	102.0	-2.1		1050	105.0
Tin			-5.1		-5.2		-6.4		-5.0	
Titanium			2.5		1.8		1.7		1.9	
Tungsten	500		7.0		563	112.6	5.9		554	110.8
Vanadium	500		-1.0		507	101.4	-0.40		520	104.0
Zinc	1000		2.1		994	99.4	1.9		1020	102.0

10.2.6  
10

INTERFERING ELEMENT CHECK STANDARDS SUMMARY  
Part 1 - ICSA and ICSAB Standards

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

File ID: SC110515M2.ICP Date Analyzed: 11/05/15 Methods: EPA 200.7, SW846 6010C  
QC Limits: 80 to 120 % Recovery Run ID: MA37966 Units: ug/l

Time:	21:46		21:52		05:26		05:32	
Sample ID:	ICSA	ICSB	ICSA1	ICSB1	ICSA2	ICSB2	ICSA1	ICSB1
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Zirconium	500	1.0			523	104.6	0.90	

(\*) Outside of QC limits  
(anr) Analyte not requested

10.2.6  
**10**

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90040  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

11/03/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.57	3.2		
Antimony	2.0	.17	.31		
Arsenic	2.0	.25	.14		
Barium	20	.023	.054		
Beryllium	0.20	.0038	.041		
Bismuth	2.0	.16	.37		
Boron	10	.14	.43		
Cadmium	0.50	.027	.051		
Calcium	500	3.1	2.7		
Chromium	1.0	.057	.099		
Cobalt	5.0	.037	.04	0.020	<5.0
Copper	2.5	.049	.14		
Iron	50	.31	3.3		
Lead	2.0	.14	.24	0.070	<2.0
Lithium	2.0	.31	.33		
Magnesium	500	3	9		
Manganese	1.5	.014	.036		
Molybdenum	2.0	.041	.15		
Nickel	4.0	.044	.096	0.050	<4.0
Palladium	5.0	.14	.37		
Potassium	1000	4.5	7.4		
Selenium	2.0	.23	.25		
Silicon	20	.46	1.7		
Silver	0.50	.035	.18		
Sodium	1000	1.6	1.5		
Strontium	1.0	.0076	.034		
Sulfur	5.0	.73	.7		
Thallium	1.0	.19	.19		
Tin	5.0	.14	1.1		
Titanium	1.0	.04	.21		
Tungsten	5.0	.15	.43		
Vanadium	5.0	.029	.075	0.020	<5.0
Zinc	5.0	.14	.77	0.42	<5.0

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: JC7097  
Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90040  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

11/03/15

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.031	.11		

Associated samples MP90040: JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

10.3.1  
**10**

## MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PAQC Batch ID: MP90040  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: mg/kg

Prep Date: 11/03/15

Metal	JC7541-2A Original MS	Spikelot MPSPK1	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	3.1	218	212	101.4
Copper	anr			
Iron	anr			
Lead	41.7	265	212	105.3
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	7.5	223	212	101.7
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	13.4	223	212	98.9
Zinc	41.5	253	212	99.8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90040  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

11/03/15

Metal	JC7541-2A Original MS	Spikelot MPSPK1	% Rec	QC Limits
-------	--------------------------	--------------------	-------	--------------

Zirconium

Associated samples MP90040: JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

10.3.2  
**10**

## MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PAQC Batch ID: MP90040  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: mg/kg

Prep Date: 11/03/15

Metal	JC7541-2A Original MSD	Spikelot MPSPK1	MSD % Rec	MSD RPD	QC Limit
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium	anr				
Chromium	anr				
Cobalt	3.1	223	218	100.7	2.3
Copper	anr				
Iron	anr				
Lead	41.7	261	218	100.4	1.5
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	7.5	227	218	100.5	1.8
Palladium					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	13.4	228	218	98.3	2.2
Zinc	41.5	256	218	98.2	1.2

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90040  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

11/03/15

Metal	JC7541-2A Original MSD	Spikelot MPSPK1	MSD % Rec	RPD	QC Limit
-------	---------------------------	--------------------	--------------	-----	-------------

Zirconium

Associated samples MP90040: JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC7097  
 Account: SECORPAE - Stantec Consulting Services Inc.  
 Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90040  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 11/03/15

Metal	BSP Result	Spikelot MPSPK1	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	199	198	100.5	80-120
Copper	anr			
Iron	anr			
Lead	201	198	101.5	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	199	198	100.5	80-120
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	195	198	98.5	80-120
Zinc	201	198	101.5	80-120

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90040  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

11/03/15

Metal	BSP Result	Spikelot MPSPK1	QC % Rec	QC Limits
-------	---------------	--------------------	-------------	--------------

Zirconium

Associated samples MP90040: JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

10.3.3

10

## SERIAL DILUTION RESULTS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.  
Project: Sunoco - Marcus Hook Facility, PAQC Batch ID: MP90040  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: ug/l

Prep Date: 11/03/15

Metal	JC7541-2A Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	30.2	29.0	4.0	0-10
Copper	anr			
Iron	anr			
Lead	401	405	1.0	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	71.9	72.3	0.6	0-10
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	129	132	2.3	0-10
Zinc	399	417	4.4	0-10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JC7097

Account: SECORPAE - Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90040  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

11/03/15

Metal	JC7541-2A	Original	SDL 1:5	%DIF	QC	Limits
-------	-----------	----------	---------	------	----	--------

Zirconium

Associated samples MP90040: JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

10.3.4

10



## General Chemistry

---

### QC Data Summaries

---

Includes the following where applicable:

- Percent Solids Raw Data Summary

## Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JC7097

Account: SECORPAE Stantec Consulting Services Inc.

Project: Sunoco - Marcus Hook Facility, PA

---

Sample: JC7097-1      Analyzed: 28-OCT-15 by KP  
ClientID: MH386-1-20151026(3')

Method: SM2540 G-97

Wet Weight (Total)	32.89	g
Tare Weight	26.66	g
Dry Weight (Total)	31.96	g
Solids, Percent	85.1	%

---

Sample: JC7097-2      Analyzed: 28-OCT-15 by KP  
ClientID: MH386-2-20151026(3')

Method: SM2540 G-97

Wet Weight (Total)	32.07	g
Tare Weight	24.58	g
Dry Weight (Total)	30.63	g
Solids, Percent	80.8	%

---

Sample: JC7097-3      Analyzed: 28-OCT-15 by KP  
ClientID: MH386-3-20151026(3')

Method: SM2540 G-97

Wet Weight (Total)	31.06	g
Tare Weight	23.53	g
Dry Weight (Total)	30.18	g
Solids, Percent	88.3	%

---

Sample: JC7097-4      Analyzed: 28-OCT-15 by KP  
ClientID: MH386-4-20151026(3')

Method: SM2540 G-97

Wet Weight (Total)	25.9	g
Tare Weight	19.87	g
Dry Weight (Total)	24.85	g
Solids, Percent	82.6	%

---

Sample: JC7097-5      Analyzed: 28-OCT-15 by KP  
ClientID: MH386-5-20151026(3')

Method: SM2540 G-97

Wet Weight (Total)	30.9	g
Tare Weight	23.6	g
Dry Weight (Total)	29.76	g
Solids, Percent	84.4	%

---



## Misc. Forms

---

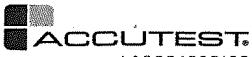
### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

---

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



## CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810  
TEL. 732-329-0200 FAX: 732-329-3499/3480  
[www.acctest.com](http://www.acctest.com)

Page 1 of 1

12.1  
12

## JC7097: Chain of Custody

Page 1 of 2

## **Accutest Labs of New England, Inc.**



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JC7097 Client: NJ Project: \_\_\_\_\_  
Date / Time Received: 10/28/2015 10:15:00 AM Delivery Method: \_\_\_\_\_ Airbill #'s: \_\_\_\_\_  
Cooler Temps (Initial/Adjusted): #1: (0.9/0.9);

<b>Cooler Security</b>	<u>Y or N</u>	<u>Y or N</u>	<b>Sample Integrity - Documentation</b>	<u>Y or N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/> <input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
<b>Cooler Temperature</b>	<u>Y or N</u>	<b>Sample Integrity - Condition</b>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/> <input type="checkbox"/>	1. Sample recv'd within HT:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
2. Thermometer ID:	G1;	2. All containers accounted for:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
3. Cooler media:	Ice (Bag)	3. Condition of sample:	Intact	
4. No. Coolers:	1			
<b>Quality Control Preservation</b>	<u>Y or N</u>	<b>Sample Integrity - Instructions</b>	<u>Y or N</u>	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	1. Analysis requested is clear:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	2. Bottles received for unspecified tests	<input type="checkbox"/> <input checked="" type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/> <input type="checkbox"/>	3. Sufficient volume recv'd for analysis:	<input checked="" type="checkbox"/> <input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	4. Compositing instructions clear:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
		5. Filtering instructions clear:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	

Comments

Accutest Laboratories  
V:(508) 481-6200

495 Technology Center West, Bldg One  
F: (508) 481-7753

Marlborough, MA 01752  
www.accutest.com

12.1  
**12**

**JC7097: Chain of Custody**  
**Page 2 of 2**

## Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JC7097

SECORPAE: Sunoco - Marcus Hook Facility, PA  
Project No: Tank Sampling (386)

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC7097-1	Collected: 26-OCT-15 13:30 By: CD MH386-1-20151026(3')			Received: 26-OCT-15	By: NT	
JC7097-1	SW846 8011	30-OCT-15 13:26	NK	29-OCT-15 AW	V8011EDB	
JC7097-2	Collected: 26-OCT-15 13:45 By: CD MH386-2-20151026(3')			Received: 26-OCT-15	By: NT	
JC7097-2	SW846 8011	30-OCT-15 14:25	NK	29-OCT-15 AW	V8011EDB	
JC7097-3	Collected: 26-OCT-15 14:00 By: CD MH386-3-20151026(3')			Received: 26-OCT-15	By: NT	
JC7097-3	SW846 8011	30-OCT-15 14:54	NK	29-OCT-15 AW	V8011EDB	
JC7097-4	Collected: 26-OCT-15 14:15 By: CD MH386-4-20151026(3')			Received: 26-OCT-15	By: NT	
JC7097-4	SW846 8011	30-OCT-15 15:23	NK	29-OCT-15 AW	V8011EDB	
JC7097-5	Collected: 26-OCT-15 14:30 By: CD MH386-5-20151026(3')			Received: 26-OCT-15	By: NT	
JC7097-5	SW846 8011	30-OCT-15 15:53	NK	29-OCT-15 AW	V8011EDB	

## Accutest Internal Chain of Custody

Page 1 of 1

Job Number: JC7097  
Account: ALNJ Accutest New Jersey  
Project: SECORPAE: Sunoco - Marcus Hook Facility, PA  
Received: 10/26/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7097-1.1	Walk In Ref #9	Aysia Wood	10/29/15 08:44	Retrieve from Storage
JC7097-1.1	Aysia Wood	Walk In Ref #9	10/29/15 14:30	Return to Storage
JC7097-2.1	Walk In Ref #9	Aysia Wood	10/29/15 08:44	Retrieve from Storage
JC7097-2.1	Aysia Wood	Walk In Ref #9	10/29/15 14:30	Return to Storage
JC7097-3.1	Walk In Ref #9	Aysia Wood	10/29/15 08:44	Retrieve from Storage
JC7097-3.1	Aysia Wood	Walk In Ref #9	10/29/15 14:30	Return to Storage
JC7097-4.1	Walk In Ref #9	Aysia Wood	10/29/15 08:44	Retrieve from Storage
JC7097-4.1	Aysia Wood	Walk In Ref #9	10/29/15 14:30	Return to Storage
JC7097-5.1	Walk In Ref #9	Aysia Wood	10/29/15 08:44	Retrieve from Storage
JC7097-5.1	Aysia Wood	Walk In Ref #9	10/29/15 14:30	Return to Storage



## GC Volatiles

### QC Data Summaries

(Accutest Labs of New England, Inc.)

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

**Method Blank Summary**

Job Number: JC7097

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45205-MB	BB65060.D	1	10/29/15	NK	10/29/15	OP45205	GBB3508

The QC reported here applies to the following samples:

Method: SW846 8011

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.5	0.41	ug/kg	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	132%
460-00-4	Bromofluorobenzene (S)	128%

## Blank Spike Summary

Page 1 of 1

Job Number: JC7097

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45205-BS	BB65061.D	1	10/30/15	NK	10/29/15	OP45205	GBB3508

The QC reported here applies to the following samples:

Method: SW846 8011

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
106-93-4	1,2-Dibromoethane	32.6	32.1	98	59-133

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	119%	70-170%
460-00-4	Bromofluorobenzene (S)	120%	70-170%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JC7097

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45205-MS	BB65076.D	1	10/30/15	NK	10/29/15	OP45205	GBB3508
OP45205-MSD	BB65077.D	1	10/30/15	NK	10/29/15	OP45205	GBB3508
JC7097-3	BB65081.D	1	10/30/15	NK	10/29/15	OP45205	GBB3508

The QC reported here applies to the following samples:

Method: SW846 8011

JC7097-1, JC7097-2, JC7097-3, JC7097-4, JC7097-5

CAS No.	Compound	JC7097-3		Spike	MS	MS	Spike	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	ug/kg	%		
106-93-4	1,2-Dibromoethane	ND		37.6	40.8	109	37.2	42.7	115	5	74-147/30
Surrogate Recoveries											
460-00-4	Bromofluorobenzene (S)	115%		122%	123%	70-170%					
460-00-4	Bromofluorobenzene (S)	116%		123%	114%	70-170%					

\* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JC7097

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

Method: SW846 8011

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
JC7097-1	BB65078.D	114	120
JC7097-2	BB65080.D	123	127
JC7097-3	BB65081.D	123	114
JC7097-4	BB65082.D	130	115
JC7097-5	BB65083.D	129	123
OP45205-BS	BB65061.D	119	120
OP45205-MB	BB65060.D	132	128
OP45205-MS	BB65076.D	115	116
OP45205-MSD	BB65077.D	122	123

Surrogate  
Compounds

Recovery  
Limits

S1 = Bromofluorobenzene (S)

70-170%

- (a) Recovery from GC signal #2
- (b) Recovery from GC signal #1

13.4.1  
13

# GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JC7097

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

Check Std:	GBB3508-ICC3508	Injection Date:	10/29/15
Lab File ID:	BB65055.D	Injection Time:	21:22
Instrument ID:	GCBB	Method:	SW846 8011

S1 <sup>a</sup>  
RT      S1 <sup>b</sup>  
RT

Check Std	6.70	6.20
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP45206-MB	BB65058.D	10/29/15	22:49	6.70	6.20
OP45206-BS	BB65059.D	10/29/15	23:17	6.70	6.20
OP45205-MB	BB65060.D	10/29/15	23:46	6.70	6.20
OP45205-BS	BB65061.D	10/30/15	00:14	6.70	6.20
OP45206-MS	BB65062.D	10/30/15	00:42	6.70	6.21
OP45206-MSD	BB65063.D	10/30/15	01:10	6.70	6.21
JC7098-1	BB65064.D	10/30/15	01:39	6.70	6.21
ZZZZZZ	BB65065.D	10/30/15	02:06	6.70	6.21
ZZZZZZ	BB65066.D	10/30/15	07:36	6.70	6.21
ZZZZZZ	BB65067.D	10/30/15	08:06	6.71	6.21

## Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

13.5.1  
**13**

# GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JC7097

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

Check Std:	GBB3508-CC3508	Injection Date:	10/30/15
Lab File ID:	BB65068.D	Injection Time:	08:36
Instrument ID:	GCBB	Method:	SW846 8011

S1 <sup>a</sup>  
RT

S1 <sup>b</sup>  
RT

Check Std	6.70	6.21
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
ZZZZZZ	BB65069.D	10/30/15	09:05	6.70	6.20
ZZZZZZ	BB65070.D	10/30/15	09:34	6.70	6.21
ZZZZZZ	BB65071.D	10/30/15	10:03	6.70	6.21
ZZZZZZ	BB65072.D	10/30/15	10:32	6.70	6.21
ZZZZZZ	BB65073.D	10/30/15	11:01	6.70	6.21
ZZZZZZ	BB65074.D	10/30/15	11:30	6.70	6.21
ZZZZZZ	BB65075.D	10/30/15	11:59	6.71	6.21
OP45205-MS	BB65076.D	10/30/15	12:28	6.71	6.21
OP45205-MSD	BB65077.D	10/30/15	12:57	6.71	6.21
JC7097-1	BB65078.D	10/30/15	13:26	6.70	6.21

## Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2

(b) Retention time from GC signal #1

# GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JC7097

Account: ALNJ Accutest New Jersey

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

Check Std:	GBB3508-CC3508	Injection Date:	10/30/15
Lab File ID:	BB65079.D	Injection Time:	13:56
Instrument ID:	GCBB	Method:	SW846 8011

S1 <sup>a</sup>  
RT      S1 <sup>b</sup>  
RT

Check Std	6.71	6.21
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
JC7097-2	BB65080.D	10/30/15	14:25	6.71	6.21
JC7097-3	BB65081.D	10/30/15	14:54	6.70	6.21
JC7097-4	BB65082.D	10/30/15	15:23	6.70	6.21
JC7097-5	BB65083.D	10/30/15	15:53	6.70	6.21
ZZZZZZ	BB65084.D	10/30/15	16:22	6.70	6.21
ZZZZZZ	BB65085.D	10/30/15	16:51	6.70	6.21
ZZZZZZ	BB65086.D	10/30/15	17:20	6.70	6.20

## Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2  
(b) Retention time from GC signal #1

**Initial Calibration Summary**

Job Number: JC7097

Sample: GBB3508-ICC3508

Account: ALNJ Accutest New Jersey

Lab FileID: BB65055.D

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

## Response Factor Report GCBB

Method : C:\msdchem\1\METHODS\EDS151029.M (ChemStation Integrator)

Title : v8011edb soil

Last Update : Fri Oct 30 10:32:53 2015

Response via : Initial Calibration

## Calibration Files

1	=BB65056.d	2	=BB65055.d	3	=BB65054.d	4	=BB65053.d
5	=BB65052.d	6	=BB65051.d				

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	1,2-Dibromoethane	1.097	1.028	1.077	1.087	1.128	1.214	1.105	E6 5.65
2)	s 4-Bromofluorobenzen	4.910	5.043	4.761	5.201	5.131	5.077	5.021	E4 3.18
3)	1,2-Dibromo-3-chlor	1.942	1.824	1.686	1.758	1.695	1.832	1.790	E6 5.43

## Signal #2

1) 1,2-Dibromoethane 7.588 7.205 7.477 7.406 7.320 6.625 7.270 E6 4.71

2) s 4-Bromofluorobenzen 5.702 6.160 5.837 5.206 4.476 4.269 5.275 E5 14.53

----- Linear regression ----- Coefficient = 0.9978  
 Response Ratio = -1018821.00121 + 591151.77784 \*A

3) 1,2-Dibromo-3-chlor 1.699 1.628 1.595 1.707 1.684 1.746 1.677 E7 3.29

(#= Out of Range

EDS151029.M

Fri Oct 30 10:33:39 2015

**Initial Calibration Verification**

Job Number: JC7097

Sample: GBB3508-ICV3508

Account: ALNJ Accutest New Jersey

Lab FileID: BB65057.D

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BB...29\BB65057.d\ECD1B.CH Vial: 27  
 Signal #2 : C:\msdchem\1\DATA\BB151029\BB65057.d\ECD2A.CH  
 Acq On : 29-Oct-15, 22:20:27 Operator: nickkk  
 Sample : icv3508-20,edb soil Inst : GCB  
 Misc : op45205,gbb3508,30,,,50,,s Multiplr: 1.00  
 IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS151029.M (ChemStation Integrator)  
 Title : v8011edb soil  
 Last Update : Fri Oct 30 10:32:53 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	1.105	1.134 E6	-2.6	110	0.00	3.22-	3.28
2 s	4-Bromofluorobenzene	50.207	51.515 E3	-2.6	102	0.00	6.17-	6.23
3	1,2-Dibromo-3-chloropr	1.790	1.958 E6	-9.4	107	0.00	10.15-	10.21

\*\*\*\*\* Signal #2 \*\*\*\*\*

1	1,2-Dibromoethane	7.270	7.626 E6	-4.9	106	0.00	3.87-	3.93
2 s	4-Bromofluorobenzene	100.000	107.736	-7.7	102	0.00	6.67-	6.73
3	1,2-Dibromo-3-chloropr	16.766	17.599 E6	-5.0	108	0.00	11.23-	11.29

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 BB65055.d EDS151029.M Fri Oct 30 10:33:30 2015

**Continuing Calibration Summary**

Job Number: JC7097

Sample: GBB3508-CC3508

Account: ALNJ Accutest New Jersey

Lab FileID: BB65068.D

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BB...29\BB65068.d\ECD1B.CH Vial: 30  
 Signal #2 : C:\msdchem\1\DATA\BB151029\BB65068.d\ECD2A.CH  
 Acq On : 30-Oct-15, 08:36:18 Operator: nickkk  
 Sample : cc3508-20,edb soil Inst : GCB  
 Misc : op45205,gbb3508,30,,,50,,s Multiplr: 1.00  
 IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS151029.M (ChemStation Integrator)  
 Title : v8011edb soil  
 Last Update : Fri Oct 30 10:32:53 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	1.105	0.989 E6	10.5	96	0.00	3.22-	3.28
2 s	4-Bromofluorobenzene	50.207	48.454 E3	3.5	96	0.00	6.18-	6.24
3	1,2-Dibromo-3-chloropr	1.790	1.768 E6	1.2	97	0.00	10.16-	10.22

\*\*\*\*\* Signal #2 \*\*\*\*\*

1	1,2-Dibromoethane	7.270	7.302 E6	-0.4	101	0.00	3.88-	3.94
2 s	4-Bromofluorobenzene	100.000	104.388	True Calc.	% Drift	-----	6.67-	6.73
3	1,2-Dibromo-3-chloropr	16.766	16.894 E6	AvgRF	CCRF	% Dev	11.23-	11.29

(#) = Out of Range SPCC's out = 0 CCC's out = 0  
 BB65055.d EDS151029.M Fri Oct 30 10:35:35 2015

**Continuing Calibration Summary**

Job Number: JC7097

Sample: GBB3508-CC3508

Account: ALNJ Accutest New Jersey

Lab FileID: BB65079.D

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BB...29\BB65079.d\ECD1B.CH Vial: 30  
 Signal #2 : C:\msdchem\1\DATA\BB151029\BB65079.d\ECD2A.CH  
 Acq On : 30-Oct-15, 13:56:08 Operator: nickkk  
 Sample : cc3508-20,edb soil Inst : GCB  
 Misc : op45205,gbb3508,30,,,50,,s Multiplr: 1.00  
 IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS151029.M (ChemStation Integrator)  
 Title : v8011edb soil  
 Last Update : Fri Oct 30 10:32:53 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	1.105	1.031 E6	6.7	100	0.01	3.23-	3.29
2 s	4-Bromofluorobenzene	50.207	50.431 E3	-0.4	100	0.01	6.18-	6.24
3	1,2-Dibromo-3-chloropr	1.790	1.892 E6	-5.7	104	0.00	10.16-	10.22

\*\*\*\*\* Signal #2 \*\*\*\*\*

1	1,2-Dibromoethane	7.270	8.034 E6	-10.5	112	0.00	3.88-	3.94
2 s	4-Bromofluorobenzene	100.000	110.209	-10.2	104	0.00	6.68-	6.74
3	1,2-Dibromo-3-chloropr	16.766	17.679 E6	-5.4	109	0.00	11.23-	11.29

( # ) = Out of Range  
BB65055.d EDS151029.MSPCC's out = 0 CCC's out = 0  
Mon Nov 02 09:11:24 2015

**Continuing Calibration Summary**

Job Number: JC7097

Sample: GBB3508-CC3508

Account: ALNJ Accutest New Jersey

Lab FileID: BB65087.D

Project: SECORPAE: Sunoco - Marcus Hook Facility, PA

## Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\DATA\BB...29\BB65087.d\ECD1B.CH Vial: 29  
 Signal #2 : C:\msdchem\1\DATA\BB151029\BB65087.d\ECD2A.CH  
 Acq On : 30-Oct-15, 17:48:42 Operator: nickkk  
 Sample : cc3508-20,edb soil Inst : GCB  
 Misc : op45205,gbb3508,30,,,50,,s Multiplr: 1.00  
 IntFile Signal #1: events.e IntFile Signal #2: events2.e

Method : C:\msdchem\1\METHODS\EDS151029.M (ChemStation Integrator)  
 Title : v8011edb soil  
 Last Update : Fri Oct 30 10:32:53 2015  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	1.105	1.035 E6	6.3	101	0.00	3.22-	3.28
2 s	4-Bromofluorobenzene	50.207	49.848 E3	0.7	99	0.00	6.17-	6.23
3	1,2-Dibromo-3-chloropr	1.790	1.851 E6	-3.4	101	0.00	10.15-	10.21

\*\*\*\*\* Signal #2 \*\*\*\*\*

1	1,2-Dibromoethane	7.270	7.849 E6	-8.0	109	0.00	3.86-	3.92
2 s	4-Bromofluorobenzene	100.000	108.319	-8.3	102	0.00	6.66-	6.72
3	1,2-Dibromo-3-chloropr	16.766	17.283 E6	-3.1	106	0.00	11.23-	11.29

( # ) = Out of Range  
BB65055.d EDS151029.MSPCC's out = 0 CCC's out = 0  
Mon Nov 02 09:10:48 2015



## GC Volatiles

---

### Raw Data

(Accutest Labs of New England, Inc.)

---

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65078.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 13:26:54  
 Operator : nickk  
 Sample : jc7097-1  
 Misc : op45205,gbb3508,30.04,,,50,,s  
 ALS Vial : 50 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:11 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 6.210 6.704 3020472 32744843 60.161 57.115  
 Spiked Amount 50.000 Range 60 - 140 Recovery = 120.32% 114.23%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

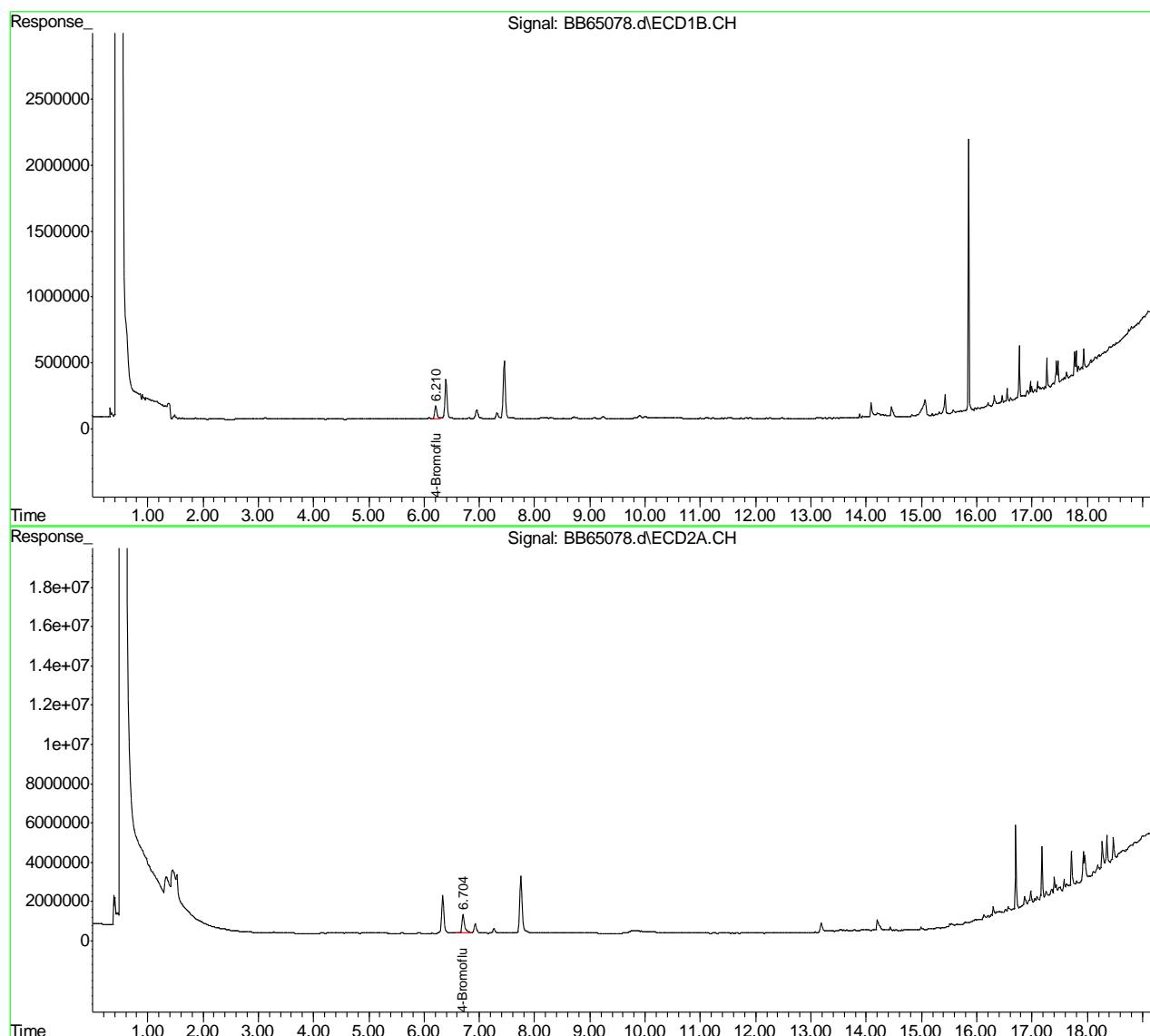
14.1.1  
14

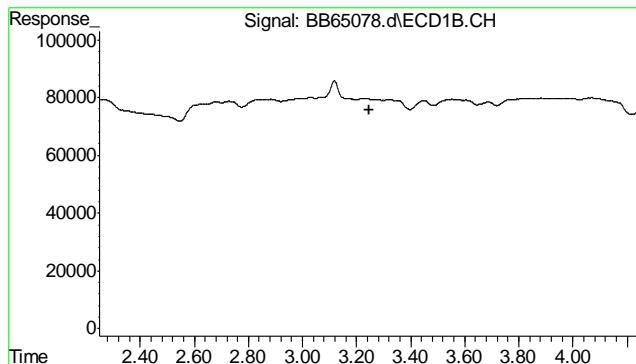
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65078.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 13:26:54  
 Operator : nickk  
 Sample : jc7097-1  
 Misc : op45205,gbb3508,30.04,,,50,,s  
 ALS Vial : 50 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:11 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

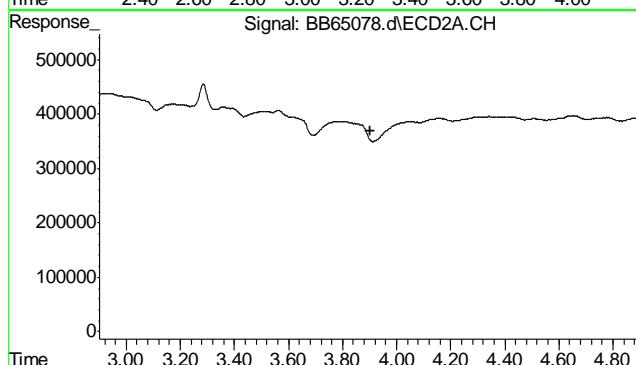
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :





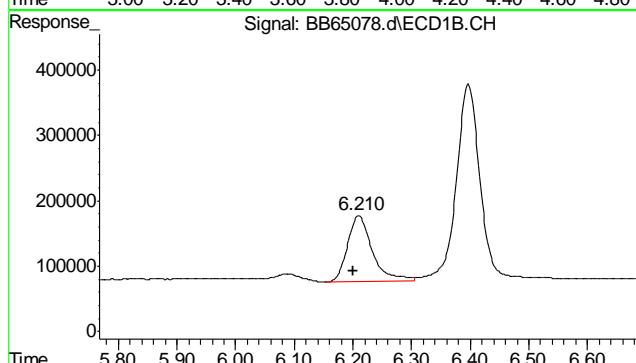
#1 1,2-Dibromoethane

R.T.: 0.000 min  
Exp R.T.: 3.248 min  
Response: 0  
Conc: N.D.



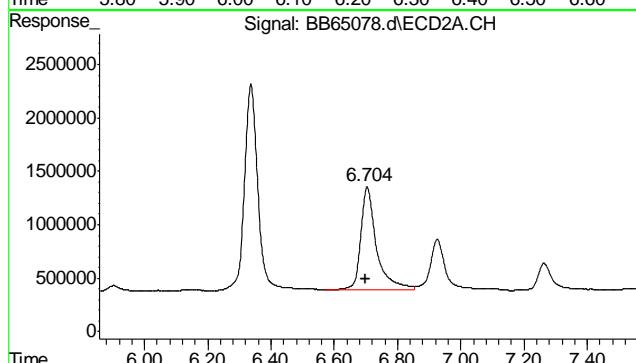
#1 1,2-Dibromoethane

R.T.: 0.000 min  
Exp R.T.: 3.901 min  
Response: 0  
Conc: N.D.



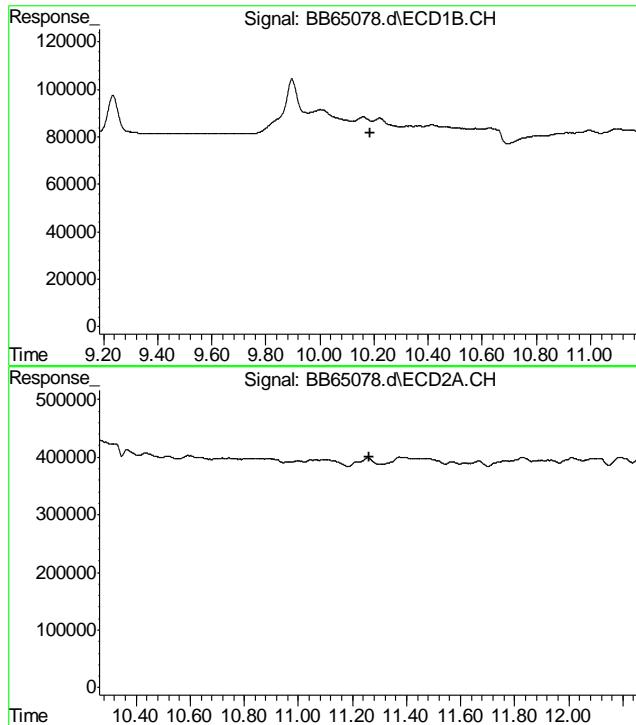
#2 4-Bromofluorobenzene

R.T.: 6.210 min  
Delta R.T.: 0.010 min  
Response: 3020472  
Conc: 60.16 ug/L



#2 4-Bromofluorobenzene

R.T.: 6.704 min  
Delta R.T.: 0.005 min  
Response: 32744843  
Conc: 57.12 ug/L



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min

Exp R.T. : 10.184 min

Response: 0

Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min

Exp R.T. : 11.263 min

Response: 0

Conc: N.D.

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65080.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 14:25:44  
 Operator : nickk  
 Sample : jc7097-2  
 Misc : op45205,gbb3508,30.49,,,50,,s  
 ALS Vial : 51 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:22 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 6.210 6.705 3198467 35307438 63.706 61.450  
 Spiked Amount 50.000 Range 60 - 140 Recovery = 127.41% 122.90%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

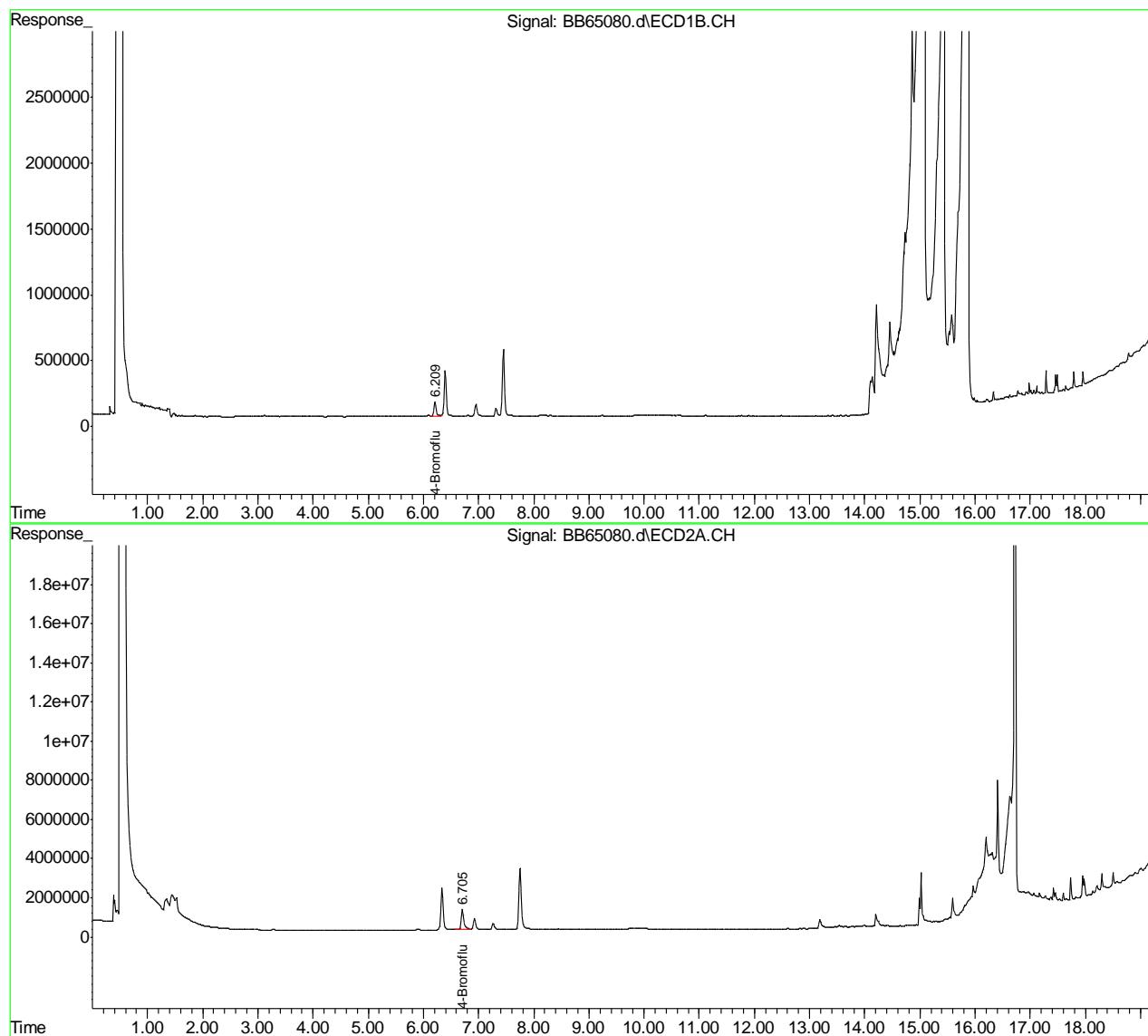
14.1.2  
14

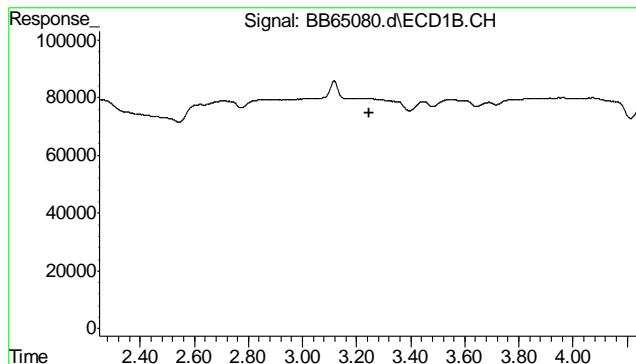
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65080.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 14:25:44  
 Operator : nickk  
 Sample : jc7097-2  
 Misc : op45205,gbb3508,30.49,,,50,,s  
 ALS Vial : 51 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:22 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

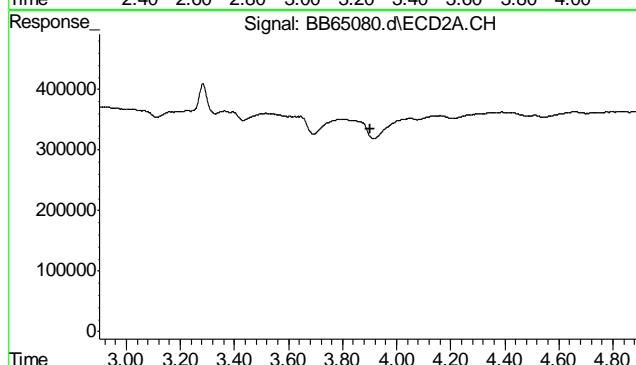
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :





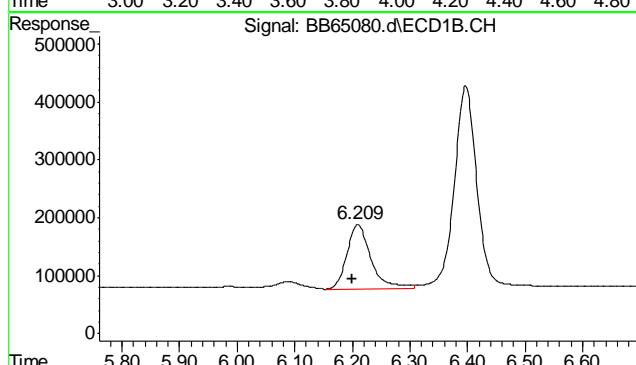
#1 1,2-Dibromoethane

R.T.: 0.000 min  
Exp R.T.: 3.248 min  
Response: 0  
Conc: N.D.



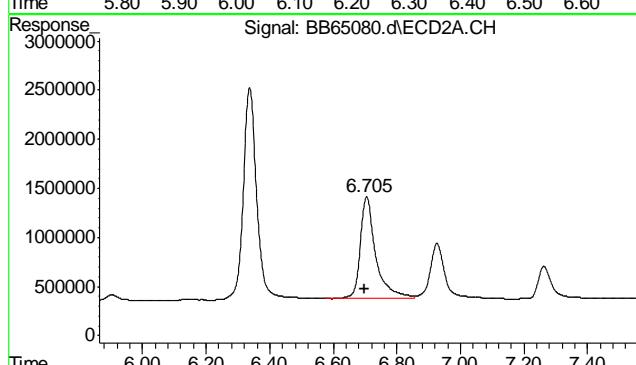
#1 1,2-Dibromoethane

R.T.: 0.000 min  
Exp R.T.: 3.901 min  
Response: 0  
Conc: N.D.



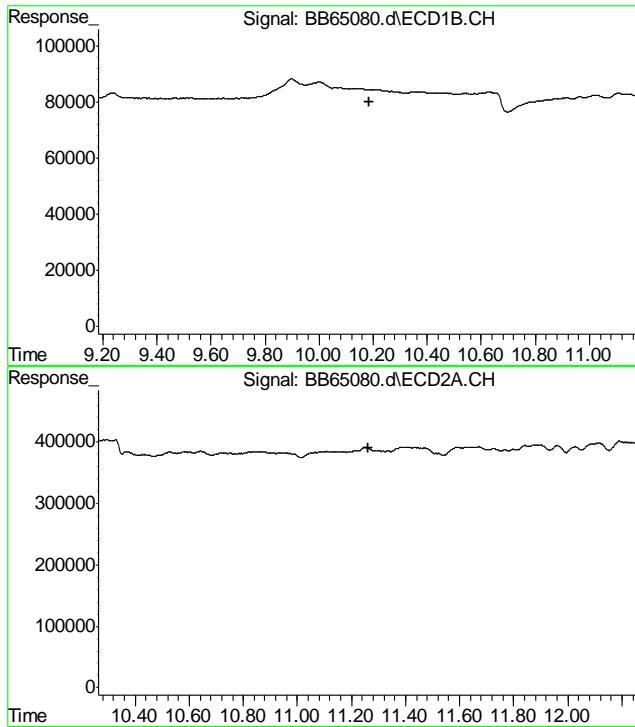
#2 4-Bromofluorobenzene

R.T.: 6.210 min  
Delta R.T.: 0.010 min  
Response: 3198467  
Conc: 63.71 ug/L



#2 4-Bromofluorobenzene

R.T.: 6.705 min  
Delta R.T.: 0.006 min  
Response: 35307438  
Conc: 61.45 ug/L



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 10.184 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 11.263 min  
Response: 0  
Conc: N.D.

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65081.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 14:54:21  
 Operator : nickk  
 Sample : jc7097-3  
 Misc : op45205,gbb3508,30.06,,,50,,s  
 ALS Vial : 52 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:31 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 6.211 6.704 2861670 35377848 56.998 61.569  
 Spiked Amount 50.000 Range 60 - 140 Recovery = 114.00% 123.14%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

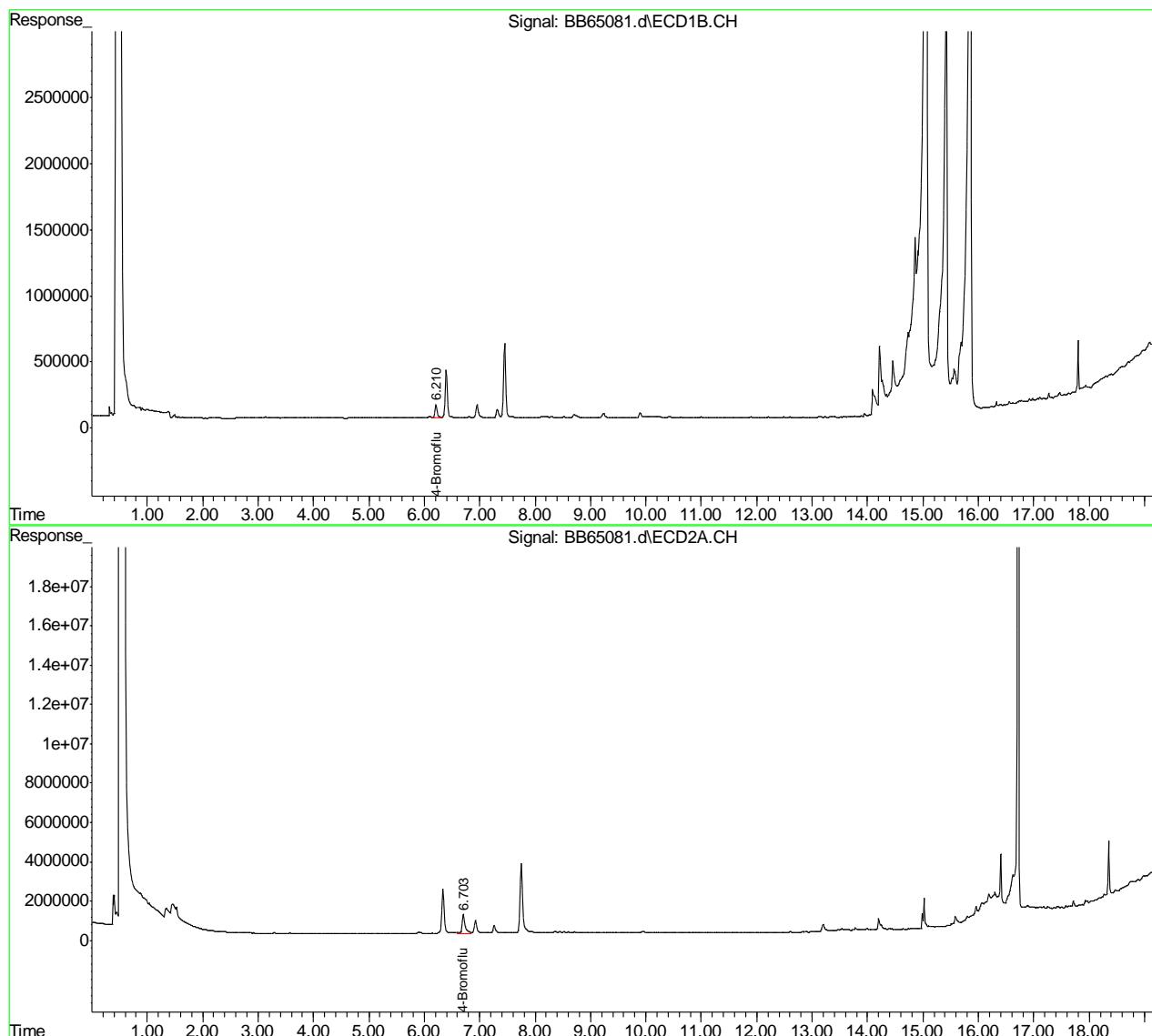
14.1.3  
14

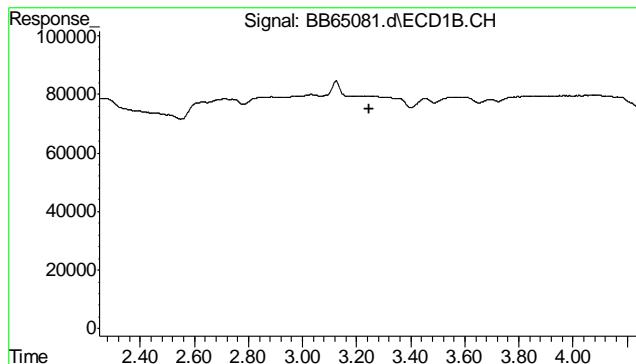
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65081.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 14:54:21  
 Operator : nickk  
 Sample : jc7097-3  
 Misc : op45205,gbb3508,30.06,,,50,,s  
 ALS Vial : 52 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:31 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

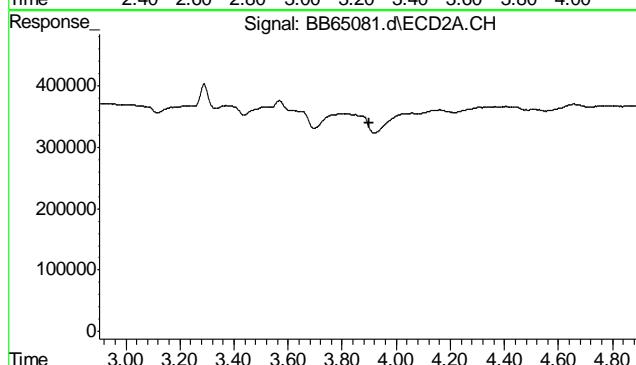
Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :





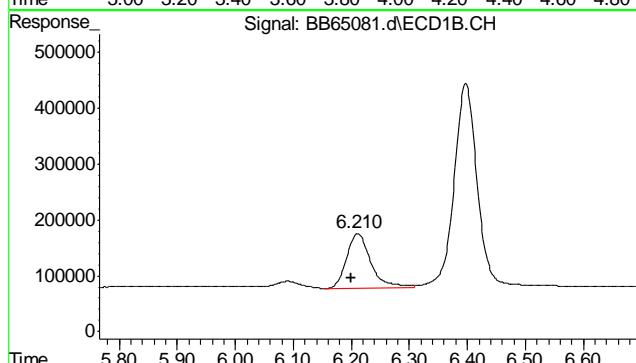
#1 1,2-Dibromoethane

R.T.: 0.000 min  
Exp R.T.: 3.248 min  
Response: 0  
Conc: N.D.



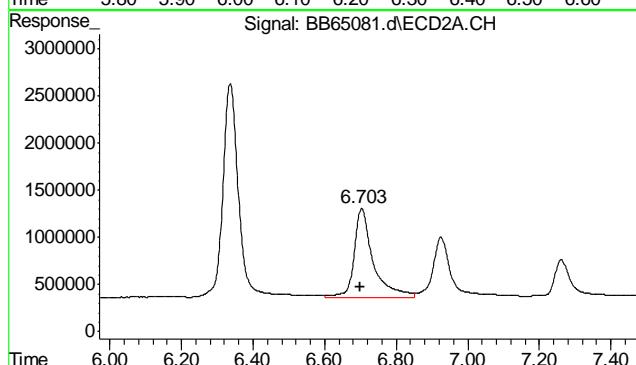
#1 1,2-Dibromoethane

R.T.: 0.000 min  
Exp R.T.: 3.901 min  
Response: 0  
Conc: N.D.



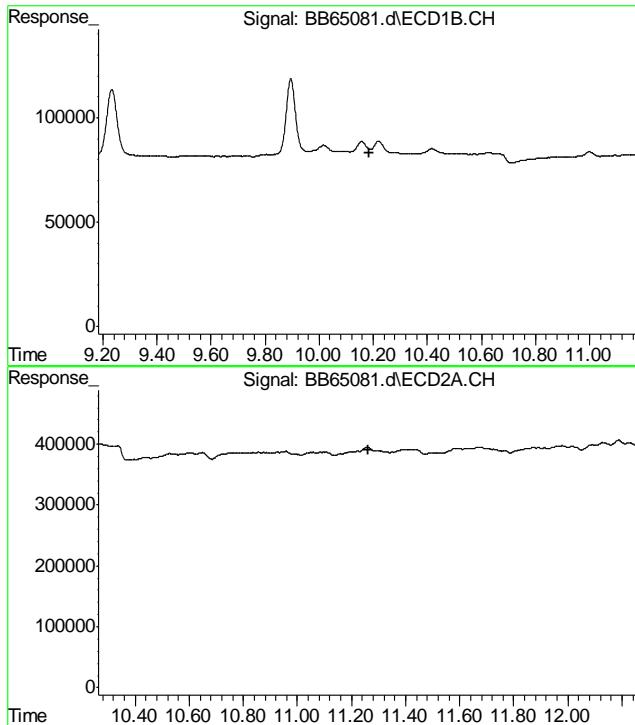
#2 4-Bromofluorobenzene

R.T.: 6.211 min  
Delta R.T.: 0.011 min  
Response: 2861670  
Conc: 57.00 ug/L



#2 4-Bromofluorobenzene

R.T.: 6.704 min  
Delta R.T.: 0.005 min  
Response: 35377848  
Conc: 61.57 ug/L



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 10.184 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 11.263 min  
Response: 0  
Conc: N.D.

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65082.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 15:23:46  
 Operator : nickk  
 Sample : jc7097-4  
 Misc : op45205,gbb3508,30.40,,,50,,s  
 ALS Vial : 53 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:46 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 6.209 6.703 2889264 37387406 57.547 64.968  
 Spiked Amount 50.000 Range 60 - 140 Recovery = 115.09% 129.94%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

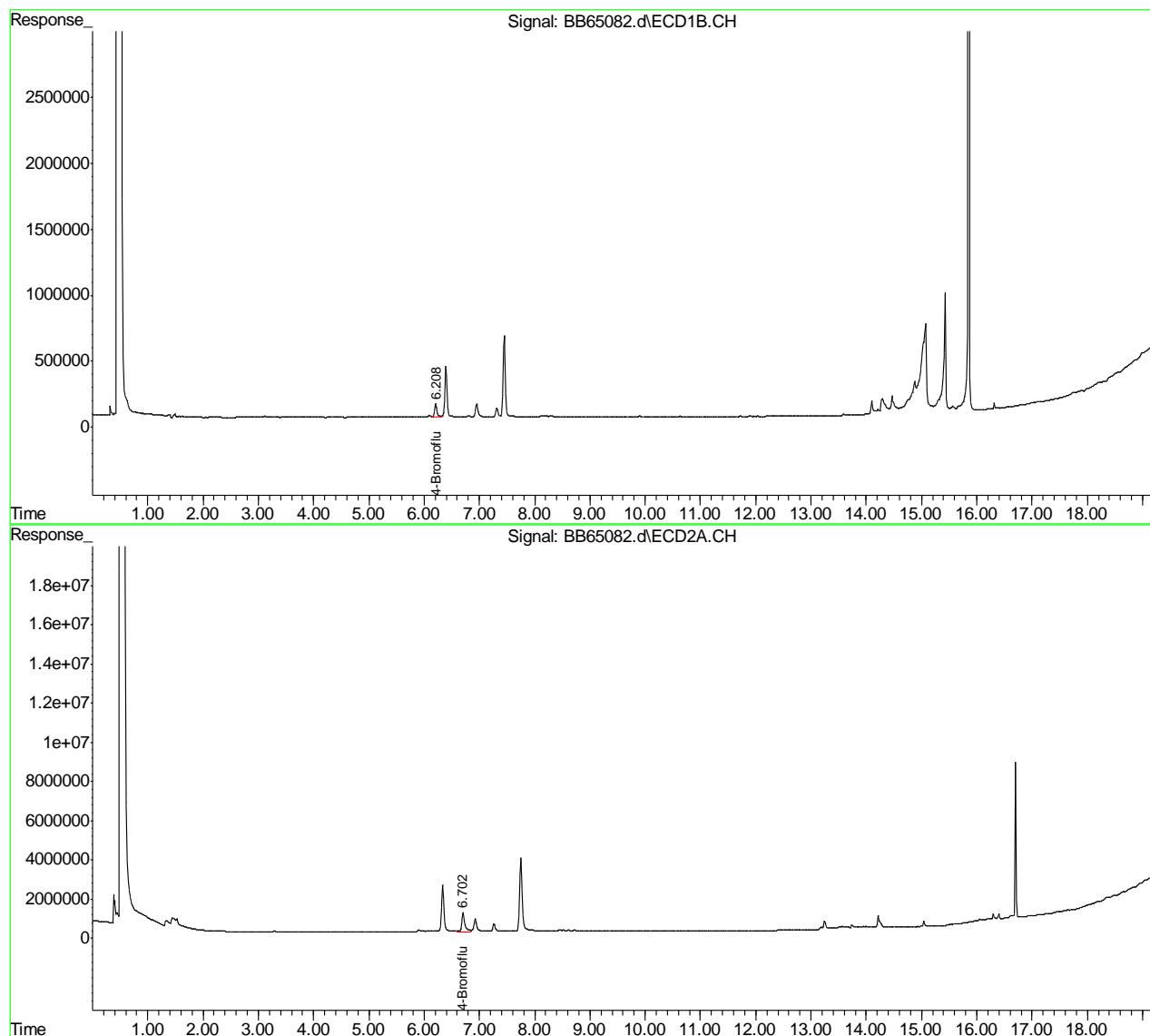
14.1.4  
14

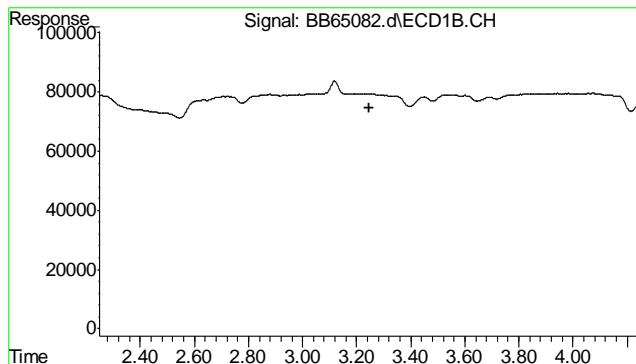
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65082.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 15:23:46  
 Operator : nickk  
 Sample : jc7097-4  
 Misc : op45205,gbb3508,30.40,,,50,,s  
 ALS Vial : 53 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

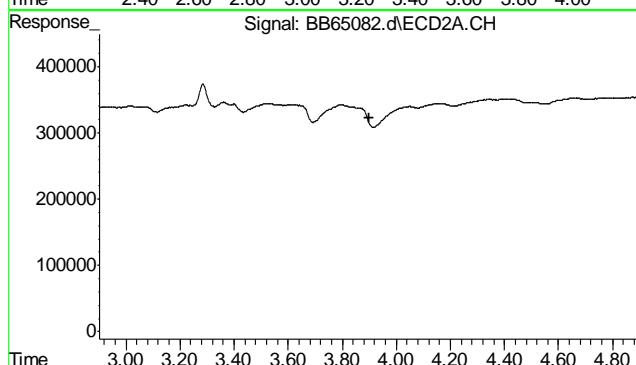
Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:14:46 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

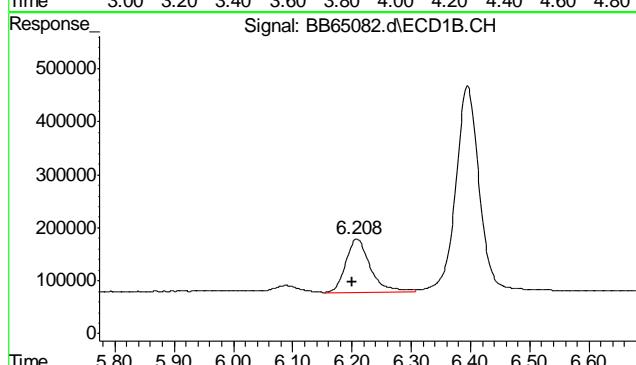




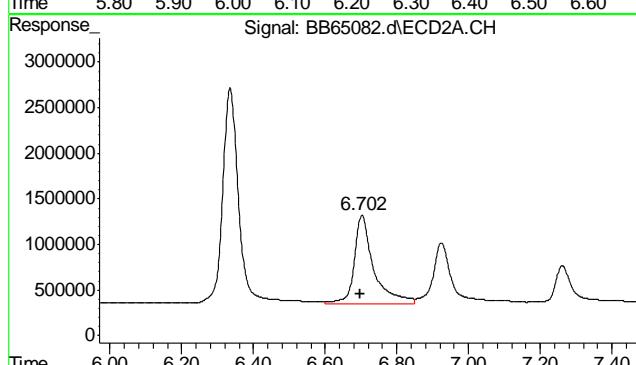
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 3.248 min  
Response: 0  
Conc: N.D.



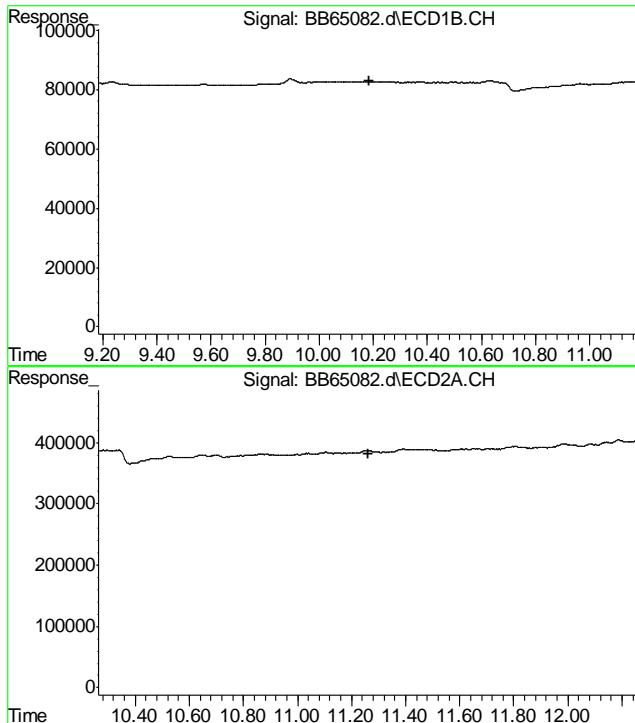
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 3.901 min  
Response: 0  
Conc: N.D.



#2 4-Bromofluorobenzene  
R.T.: 6.209 min  
Delta R.T.: 0.009 min  
Response: 2889264  
Conc: 57.55 ug/L



#2 4-Bromofluorobenzene  
R.T.: 6.703 min  
Delta R.T.: 0.004 min  
Response: 37387406  
Conc: 64.97 ug/L



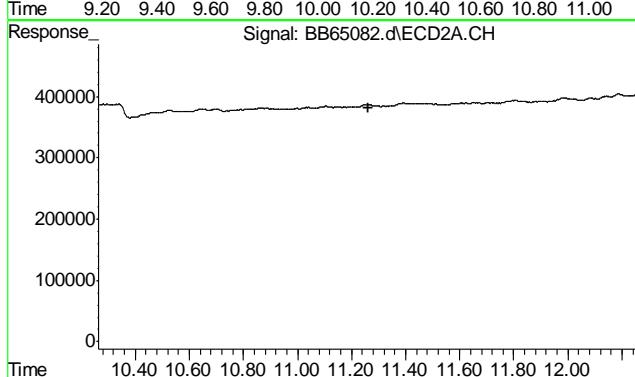
#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min

Exp R.T. : 10.184 min

Response: 0

Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min

Exp R.T. : 11.263 min

Response: 0

Conc: N.D.

14.1.4  
14

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65083.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 15:53:13 (#1); 30-Oct-15, 15:53:12 (#2)  
 Operator : nickk  
 Sample : jc7097-5  
 Misc : op45205,gbb3508,30.39,,,50,,s  
 ALS Vial : 54 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:15:29 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 6.205 6.699 3085827 37219911 61.462 64.685  
 Spiked Amount 50.000 Range 60 - 140 Recovery = 122.92% 129.37%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

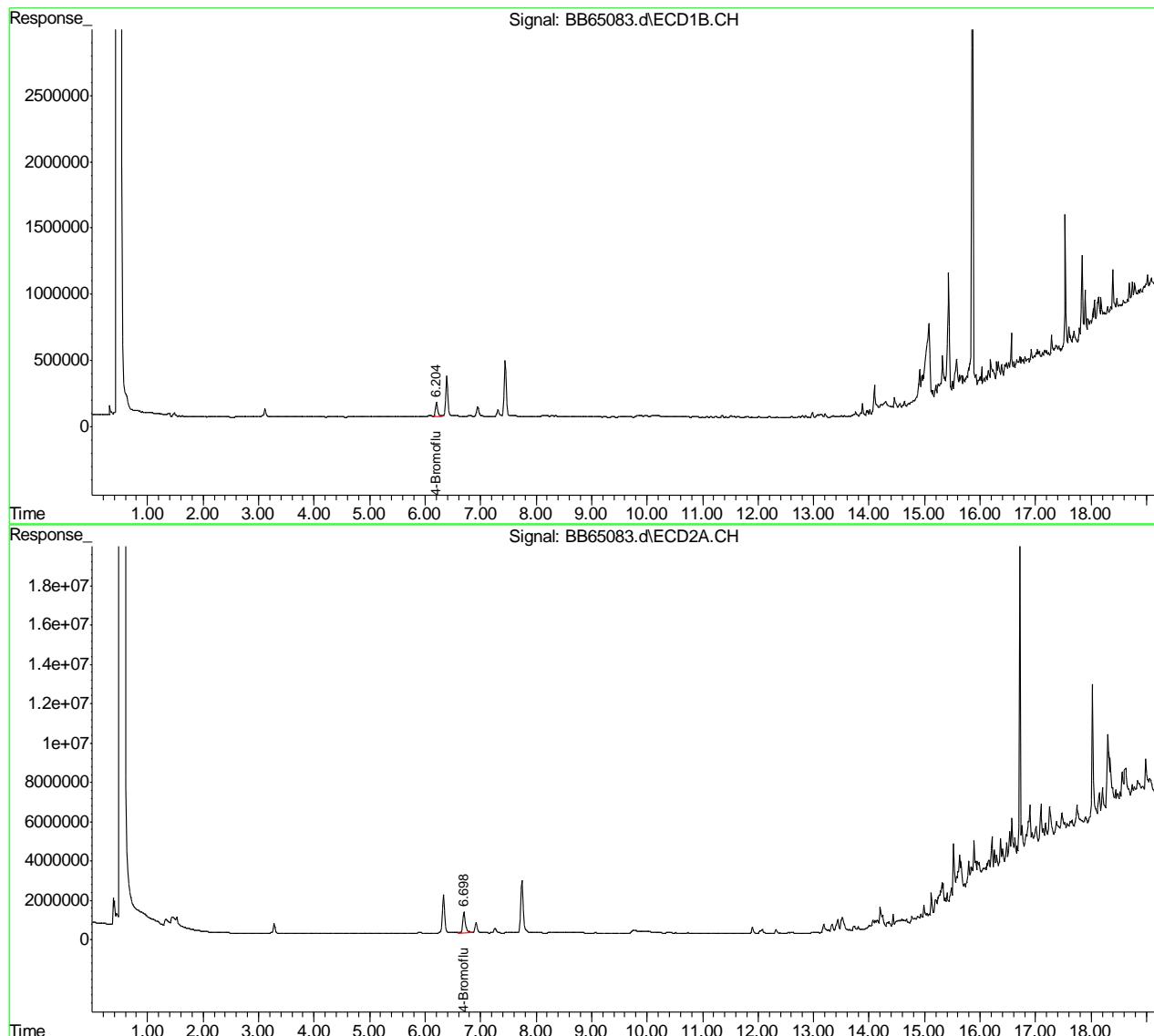
14.1.5  
14

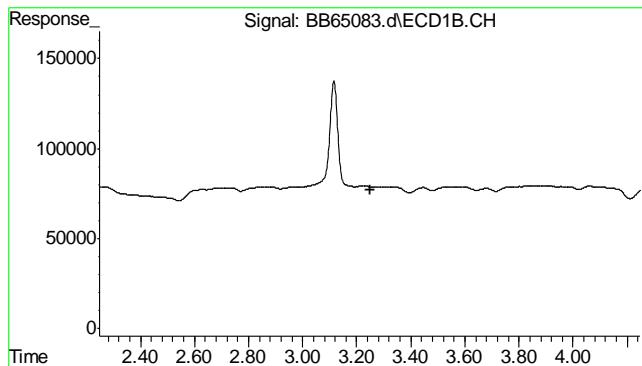
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65083.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 30-Oct-15, 15:53:13 (#1); 30-Oct-15, 15:53:12 (#2)  
 Operator : nickk  
 Sample : jc7097-5  
 Misc : op45205,gbb3508,30.39,,,50,,s  
 ALS Vial : 54 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

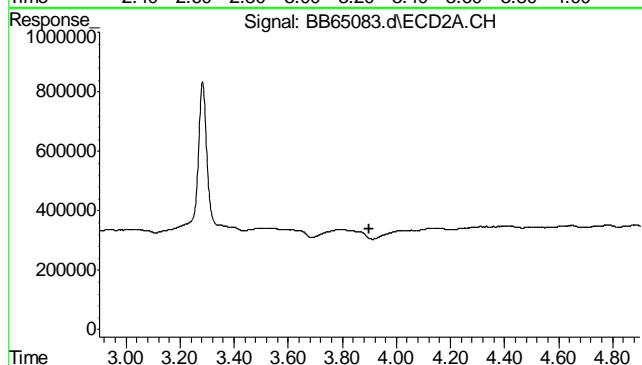
Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Nov 02 09:15:29 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

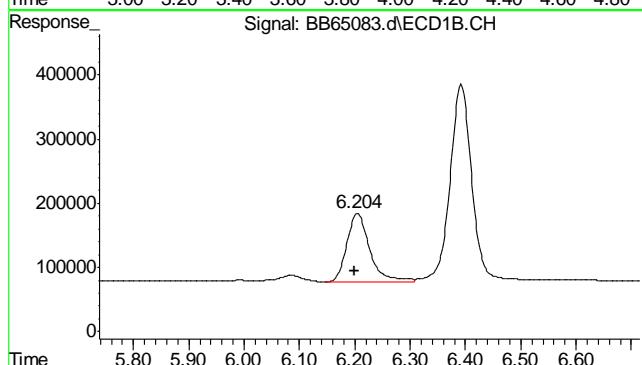




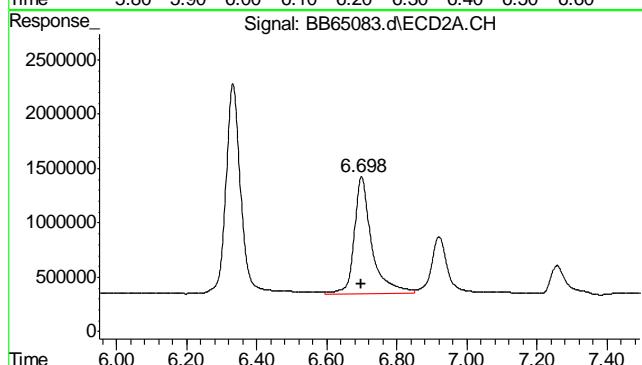
#1 1,2-Dibromoethane  
 R.T.: 0.000 min  
 Exp R.T.: 3.248 min  
 Response: 0  
 Conc: N.D.



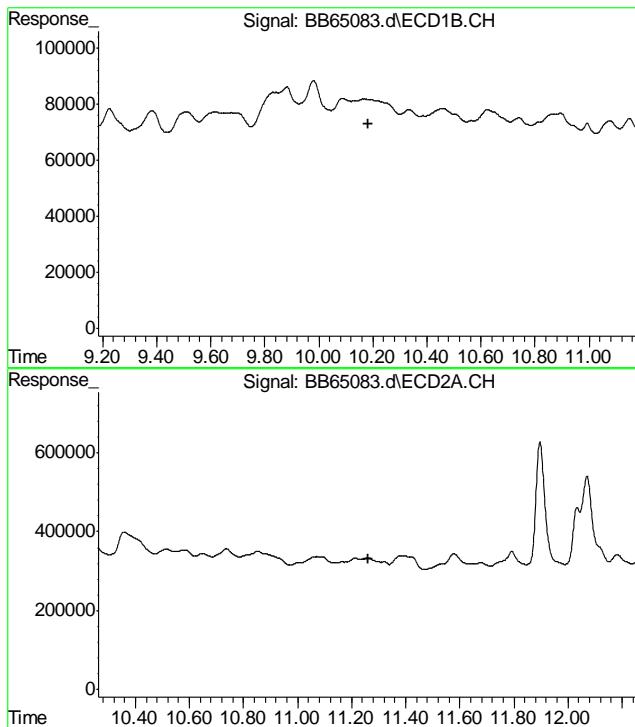
#1 1,2-Dibromoethane  
 R.T.: 0.000 min  
 Exp R.T.: 3.901 min  
 Response: 0  
 Conc: N.D.



#2 4-Bromofluorobenzene  
 R.T.: 6.205 min  
 Delta R.T.: 0.005 min  
 Response: 3085827  
 Conc: 61.46 ug/L



#2 4-Bromofluorobenzene  
 R.T.: 6.699 min  
 Delta R.T.: 0.000 min  
 Response: 37219911  
 Conc: 64.69 ug/L



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 10.184 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 11.263 min  
Response: 0  
Conc: N.D.

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65060.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 29-Oct-15, 23:46:14  
 Operator : nickk  
 Sample : op45205-mb  
 Misc : op45205,gbb3508,30.25,,,50,,s  
 ALS Vial : 33 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Oct 30 09:38:45 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 6.202 6.700 3222126 37888352 64.177 65.816  
 Spiked Amount 50.000 Range 60 - 140 Recovery = 128.35% 131.63%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

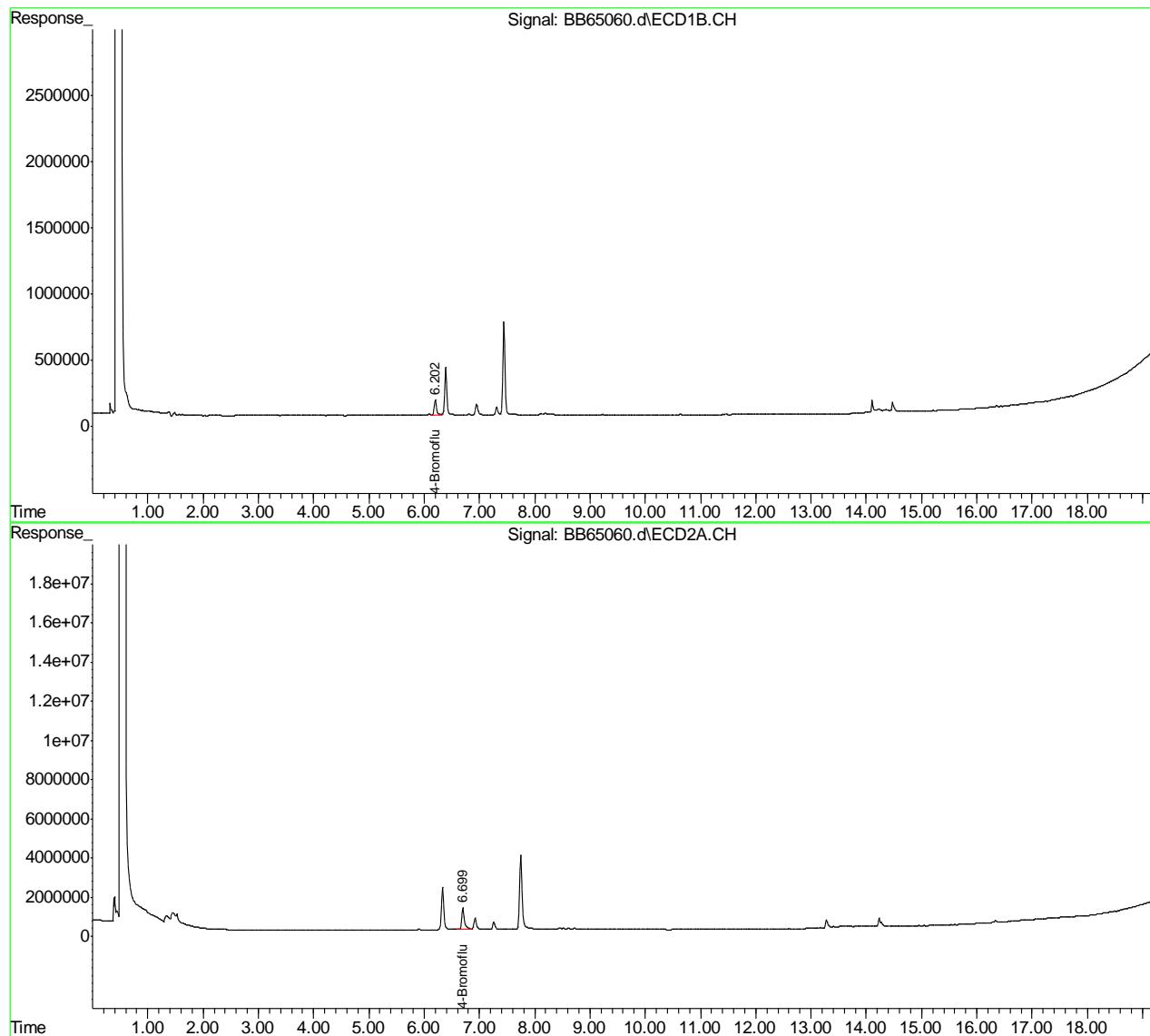
14.2.1  
14

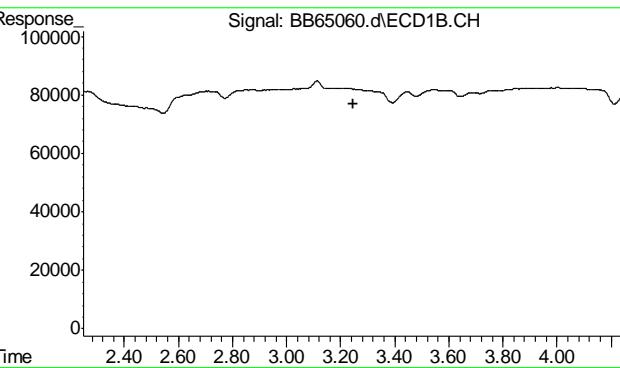
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\BB151029\  
 Data File : BB65060.d  
 Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH  
 Acq On : 29-Oct-15, 23:46:14  
 Operator : nickk  
 Sample : op45205-mb  
 Misc : op45205,gbb3508,30.25,,,50,,s  
 ALS Vial : 33 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

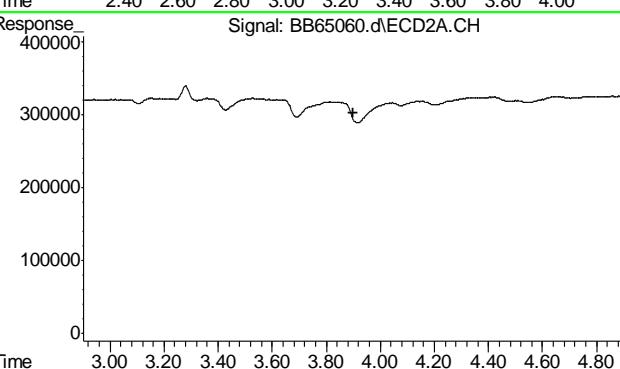
Integration File signal 1: events.e  
 Integration File signal 2: events2.e  
 Quant Time: Oct 30 09:38:45 2015  
 Quant Method : C:\msdchem\1\METHODS\EDS151029.M  
 Quant Title : v8011edb soil  
 QLast Update : Fri Oct 30 10:32:53 2015  
 Response via : Initial Calibration  
 Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

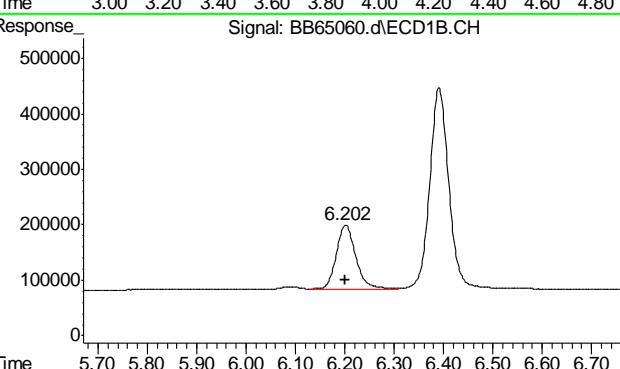




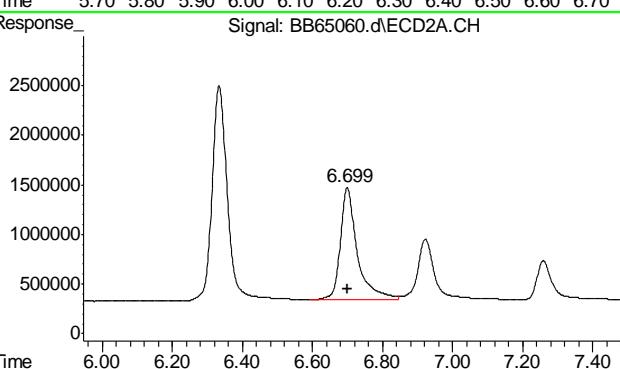
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 3.248 min  
Response: 0  
Conc: N.D.



#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 3.901 min  
Response: 0  
Conc: N.D.

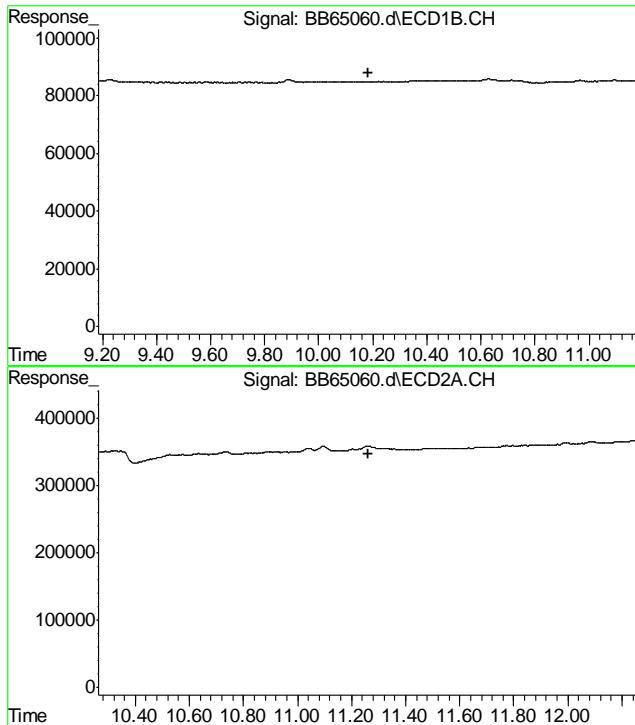


#2 4-Bromofluorobenzene  
R.T.: 6.202 min  
Delta R.T.: 0.002 min  
Response: 3222126  
Conc: 64.18 ug/L



#2 4-Bromofluorobenzene  
R.T.: 6.700 min  
Delta R.T.: 0.000 min  
Response: 37888352  
Conc: 65.82 ug/L

14.2.1  
14



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 10.184 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 11.263 min  
Response: 0  
Conc: N.D.